Primary Production and Nutrients on the Labrador Shelf, in Hudson Strait and Hudson Bay in August and September 1982

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Les numéros 1 à 25 de cette série ont été publiés à titre de Records statistiques, Service des pêches et de la mer. Les numéros 26-160 ont été publiés à titre de Rapports statistiques du Service des pêches et de la mer, Ministère des Pêches et de l'Environnement. Le nom de la série a été modifié à partir du numéro 161.

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Canadian Data Report of

Fisheries and Aquatic Science No. 692

March 1988

PRIMARY PRODUCTION AND NUTRIENTS ON THE LABRADOR SHELF, IN HUDSON STRAIT AND HUDSON BAY IN AUGUST AND SEPTEMBER 1982

by

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Abstract

Irwin, B., Dickie, P., Hodgson, M. and Platt,T. 1988. Primary production and nutrients on the Labrador Shelf, in Hudson Strait and Hudson Bay in August and September 1982. Can. Data Rep. Fish. Aquat. Sci. No. 692: iv + 139 p.

During the period 12 August to 6 September 1982, a series of primary production experiments was conducted on board CSS Hudson on the Labrador Shelf, in Hudson Strait and Hudson Bay. In this report we make available the raw data and also the fitted light saturation parameters.

Résumé

Irwin, B., Dickie, P., Hodgson, M. and Platt, T. 1988. Primary production and nutrients on the Labrador Shelf, in Hudson Strait and Hudson Bay in August and September 1982. Can. Data Rep. Fish. Aquat. Sci. No. 692: iv + 139 p.

Pendant la période du 12 aôut au 6 septembre une série d'expériences de la production primaire a été effectuée au bord du CSS Hudson dans la mer Labrador, au détroit de Hudson et dans la baie de Hudson. Dans ce rapport nous présentons les données brûtes ainsi que les paramètres qui furent calculés pour représenter les courbes de production en fonction de la lumière.

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Introduction

This is the thirteenth in a series of data reports giving the results of experiments on photosynthetic production versus light intensity for natural phytoplankton populations in the North Atlantic and adjacent waters north of 50°N. Samples were collected from CSS Hudson between August 12 and September 6, 1982. This was a joint cruise with the Chemical Oceanography Division of the Physical and Chemical Sciences Branch of the Department of Fisheries and Oceans.

Sampling

Water samples for primary production measurements were collected with 30 *l* Niskin bottles. At most stations two depths were sampled - the upper mixed layer and the bottom of the mixed layer.

Additional samples were collected with a rosette sampler on the Labrador Shelf. Sampling depths were selected by physical features in the water column.

Methods

Productivity

Primary productivity was measured using the ^{14}C method as described in Strickland and Parsons (1972). For each light saturation experiment 50 ml of sodium bicarbonate was mixed with 5 *l* of water to yield an approximate activity of 5 µci per 100 ml of sample. Each of 43 light and 2 dark bottles was filled with 100 ml aliquot of innoculated sample water and placed in a temperature controlled incubator. Illumination in the incubators was provided by a 2000 W tungsten-halogen lamp (New Haline OHS 2000) having a maximum intensity of approximately 1000 W m^{-2} PAR.

Temperature control in the incubators was achieved by pumping water from a temperature controlled bath and circulator (Forma Scientific Model 2160). Temperatures were matched to in situ temperatures. Incubations were terminated after 3 hours. All

samples were filtered into Whatman GF/F filters and dried in a dessicator. Filters were stored at -20°C for later counting in a liquid scintillation counter.

Chlorophyll a

Replicate 100 ml samples were filtered onto 25 mm GF/F or 25 mm 1.0 μm Nuclepore filters. Filters were placed in glass vials containing 10 ml of 85% acetone and extracted for 24 hours at 0°C in the dark. The fluorometric technique of Yentsch and Menzel (1963) as modified by Holm-Hansen et al. (1965) was used to estimate chlorophyll and phaeophytin concentrations.

Nutrients

Three inorganic nutrients were measured routinely from each sample. All analyses were carried out on board within a few hours of collection. Inorganic phosphate, silicate and nitrate were measured on a Technicon II autoanalyser using industrial methods 155- 71W, 186-72W, and 158-71W respectively.

Incubation light intensity

Photosynthetically active radiation (PAR) was measured in each bottle position using a Licor Li 185A quantum meter fitted with a 19OS underwater quantum sensor.

Estimation of photosynthetic parameters

Measurements of specific production, P^B, and irradiance, I, were used to estimate parameters in the equation of Platt et al. 1981,

$$P^B = P_S (1 - e^{-\alpha I/Ps}) e^{-\beta I/Ps}$$

P_S (mg C mg Chl^{-1} h^{-1}) is the light saturated rate of specific production in the absence of photoinhibition, α (mg C (mg Chl)$^{-1}$ h^{-1} W^{-1} m^{-2}) is the initial slope of the PI curve and β (same units as α) is a parameter that characterises photoinhibition. Complete details of the fitting routine are given in Irwin et al. (1982) and a discussion of the mathematical basis for this technique is in Irwin et al. (1980).

Acknowledgements

We wish to thank Dave Rudderham and Alastair Macdonald for their assistance in the calculation of the light saturation parameters and the preparation of the data tables. A special thank you goes to Ray Hiltz who analyzed all the nutrient samples.

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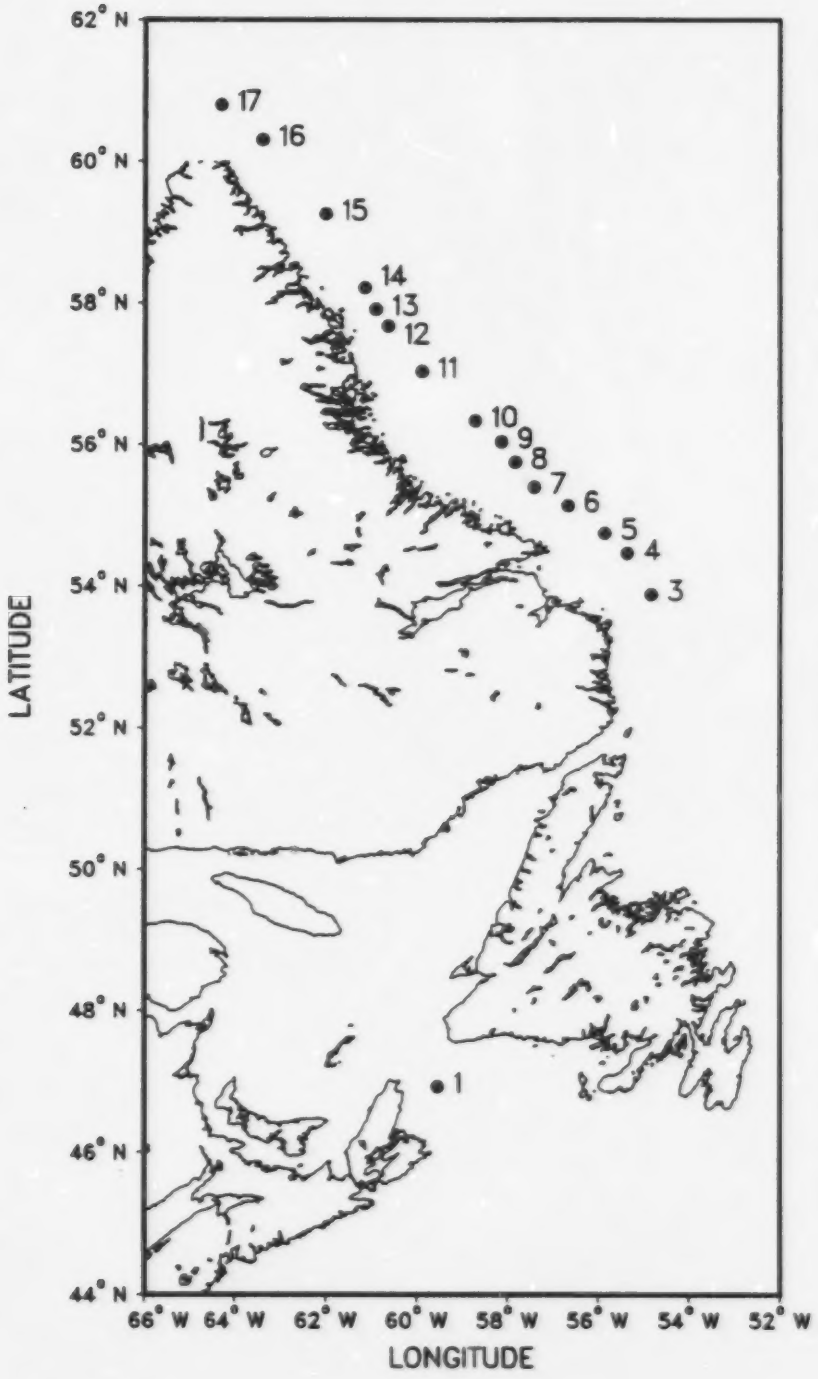
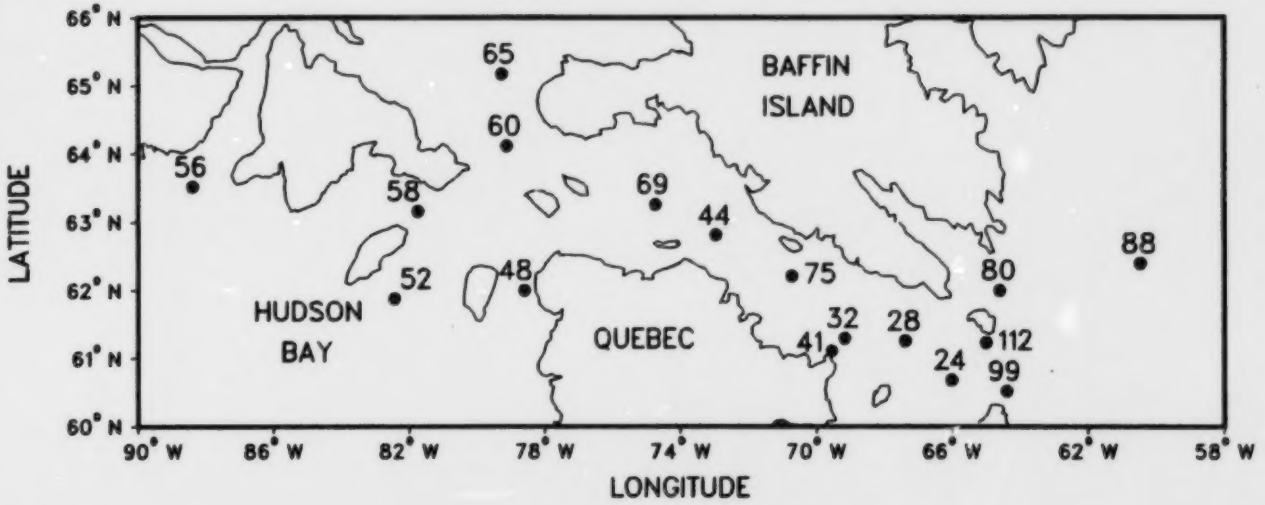
HUDSON 1982 STATIONS



LOCATION OF SAMPLING STATIONS

HUDSON BAY 1982 PI STATIONS



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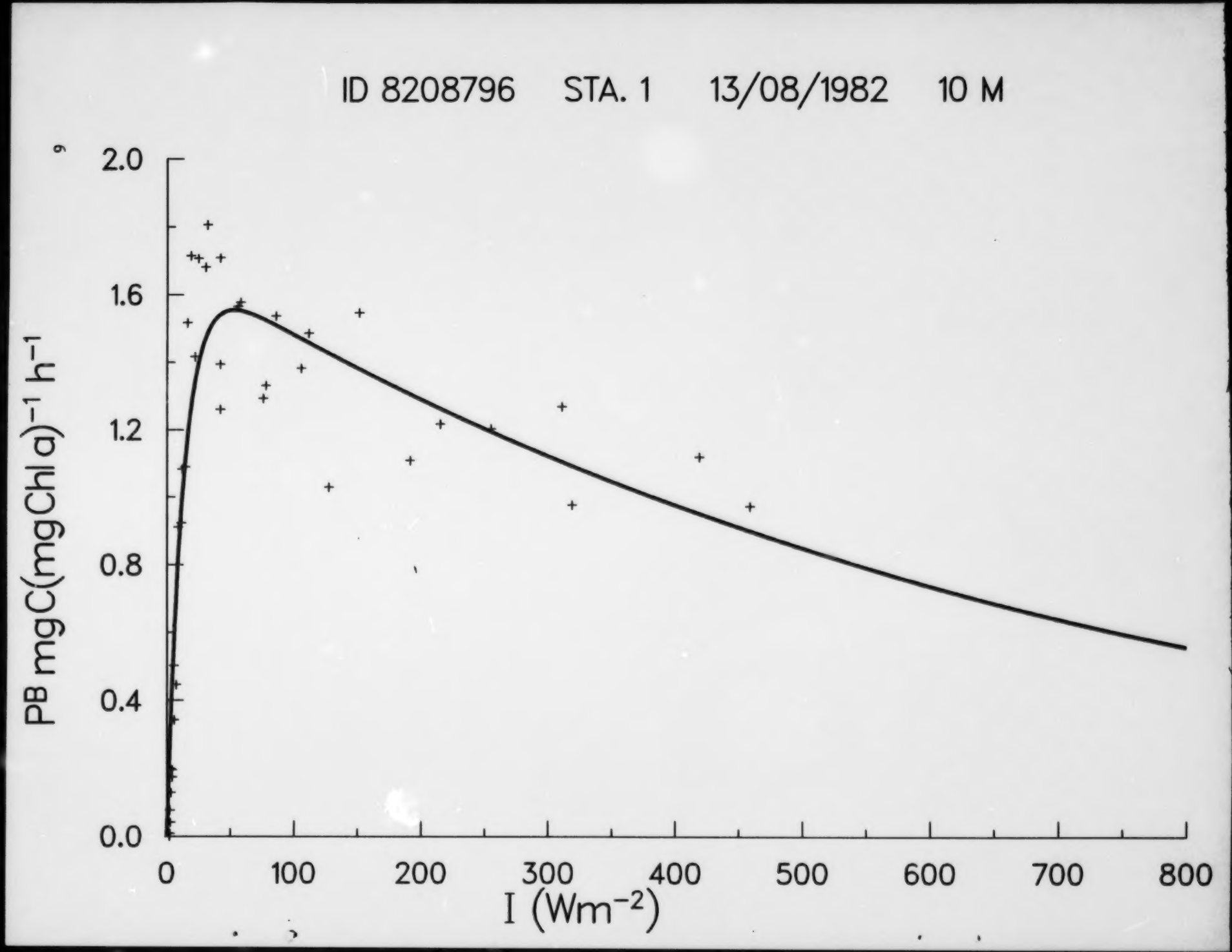
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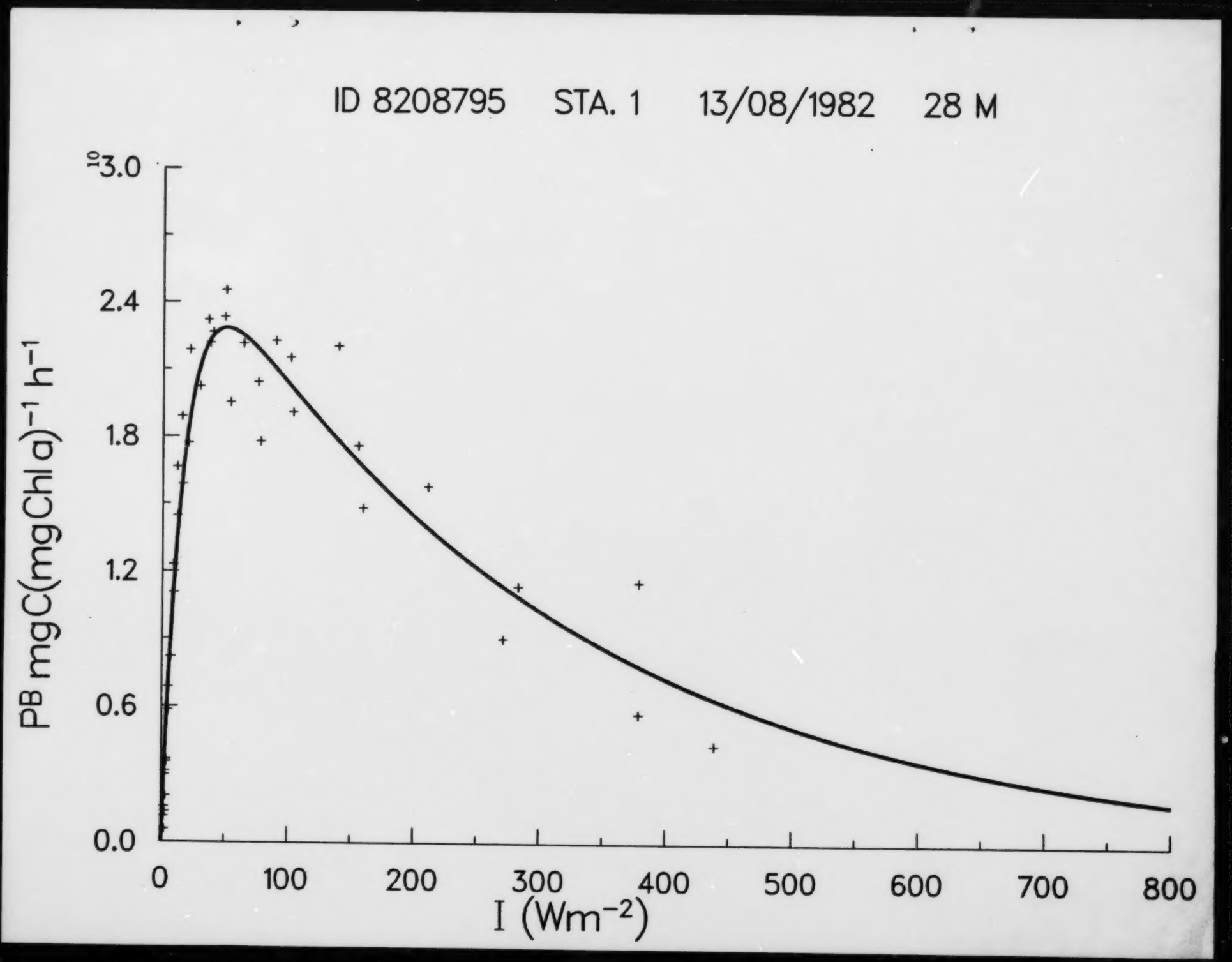
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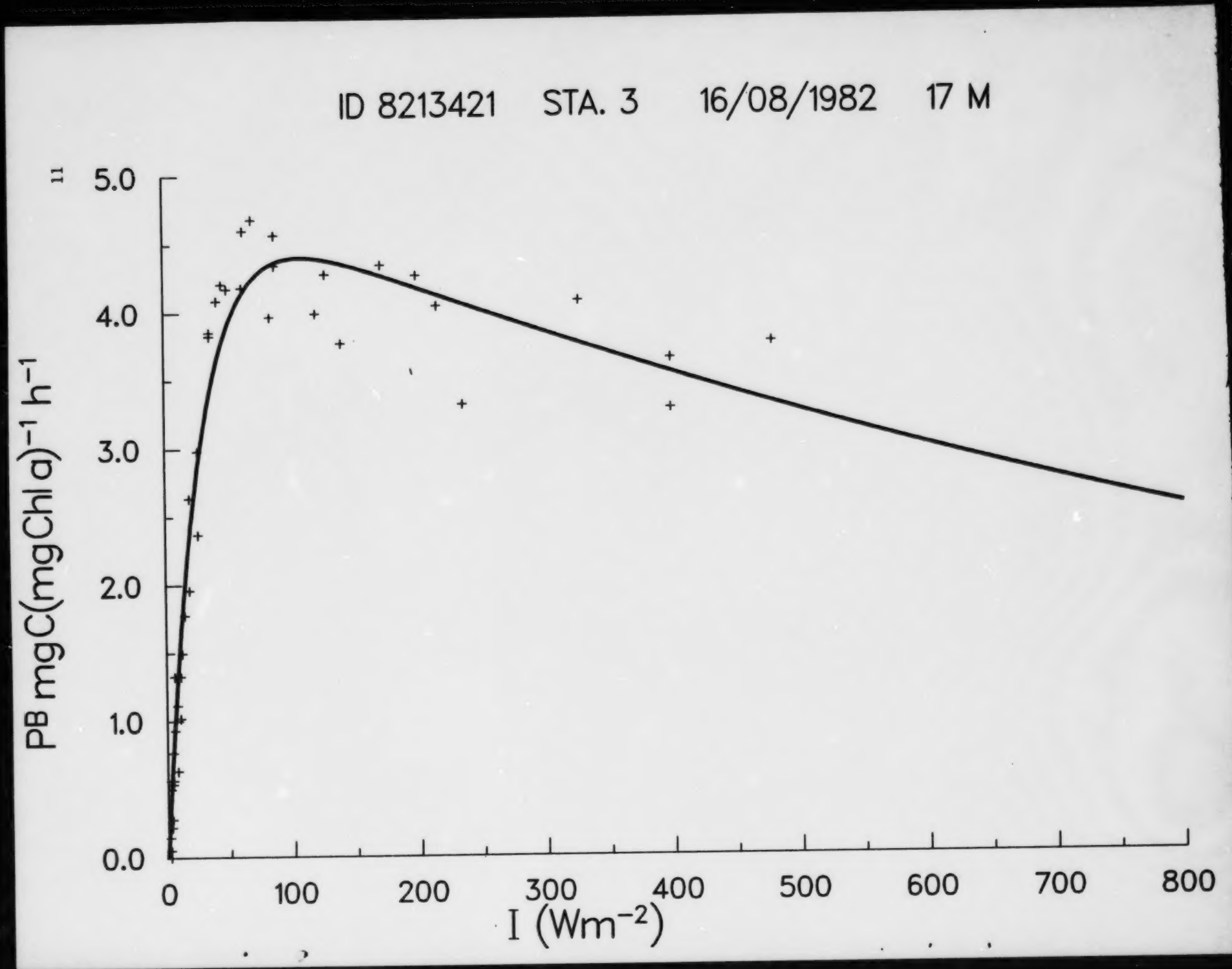
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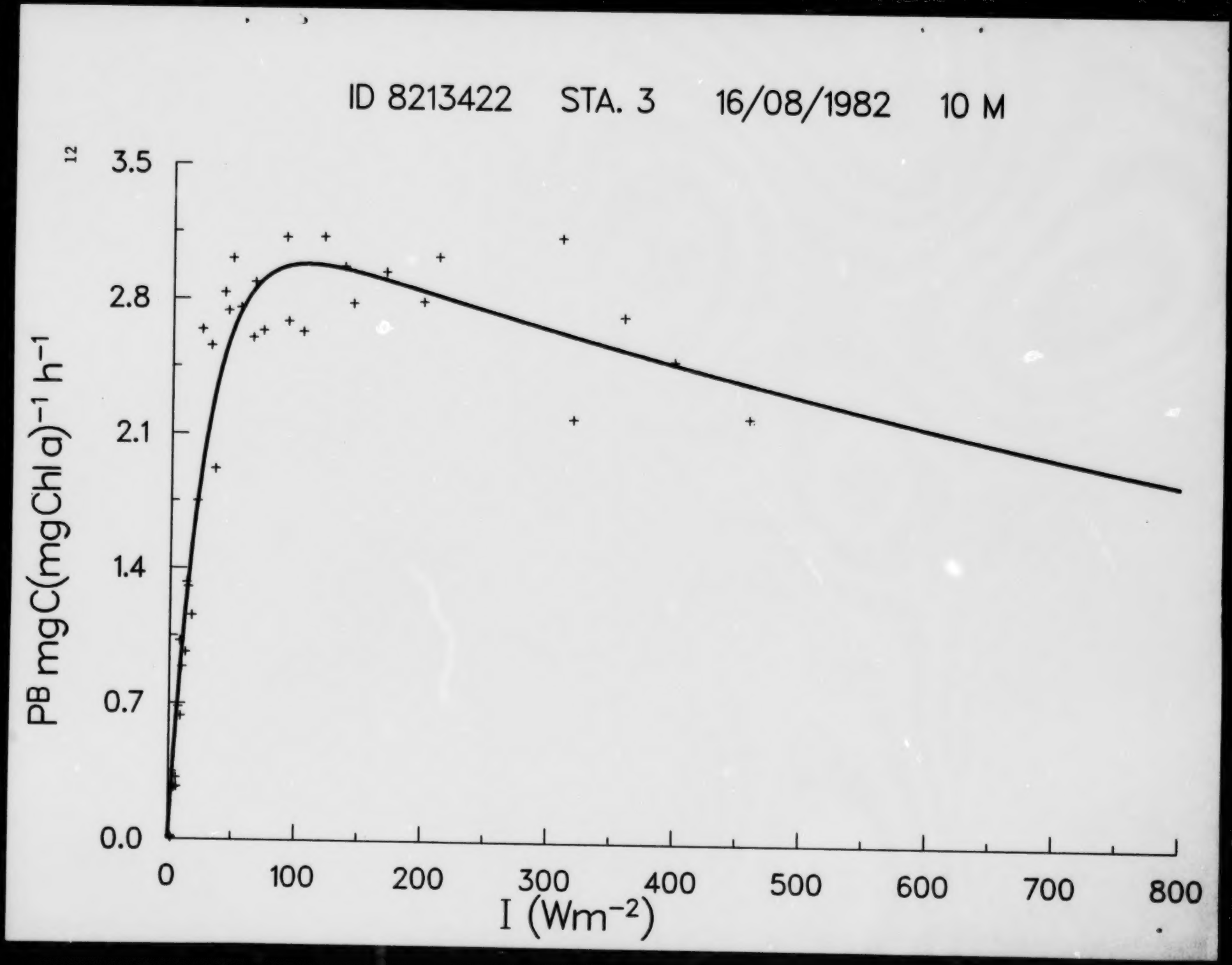
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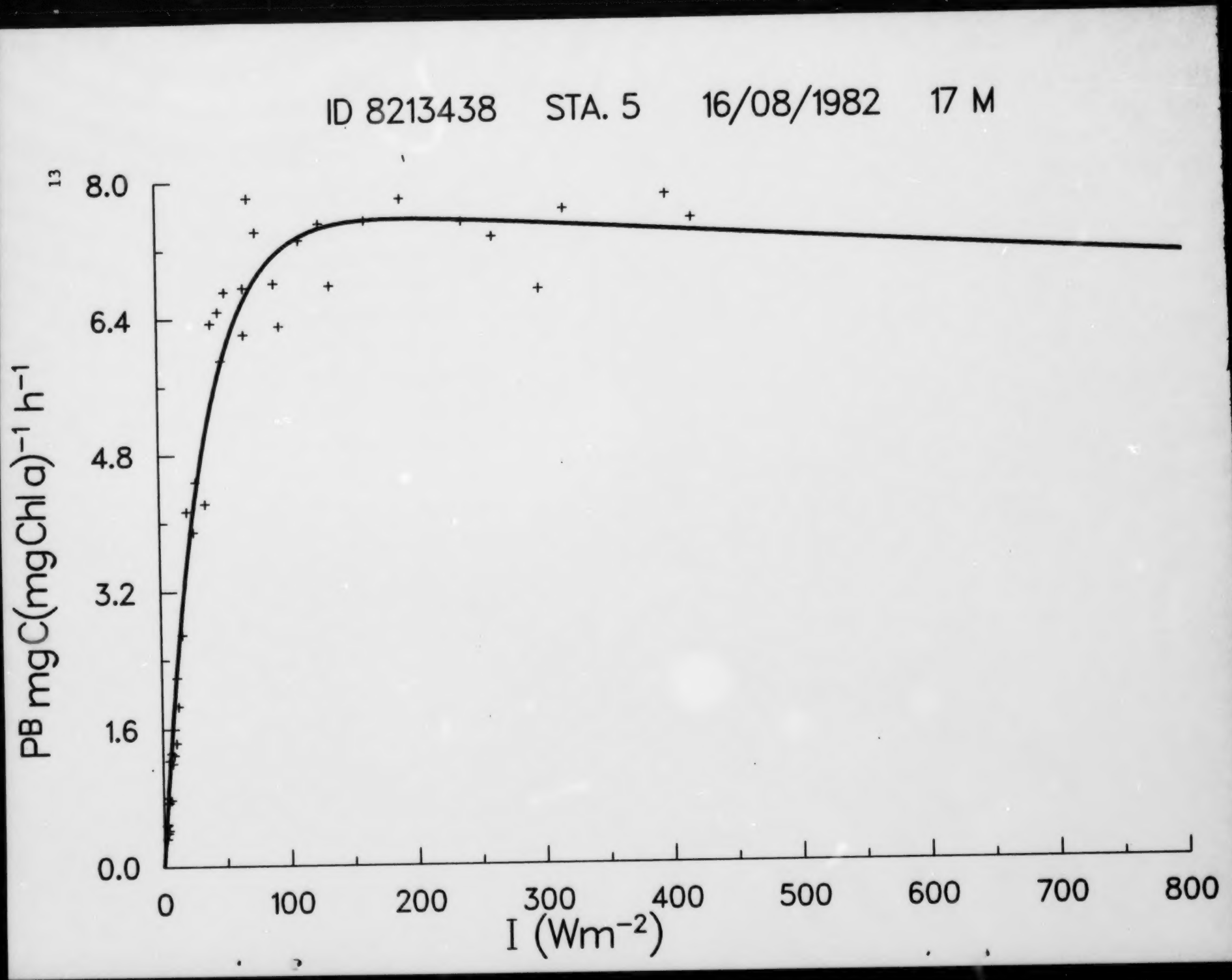
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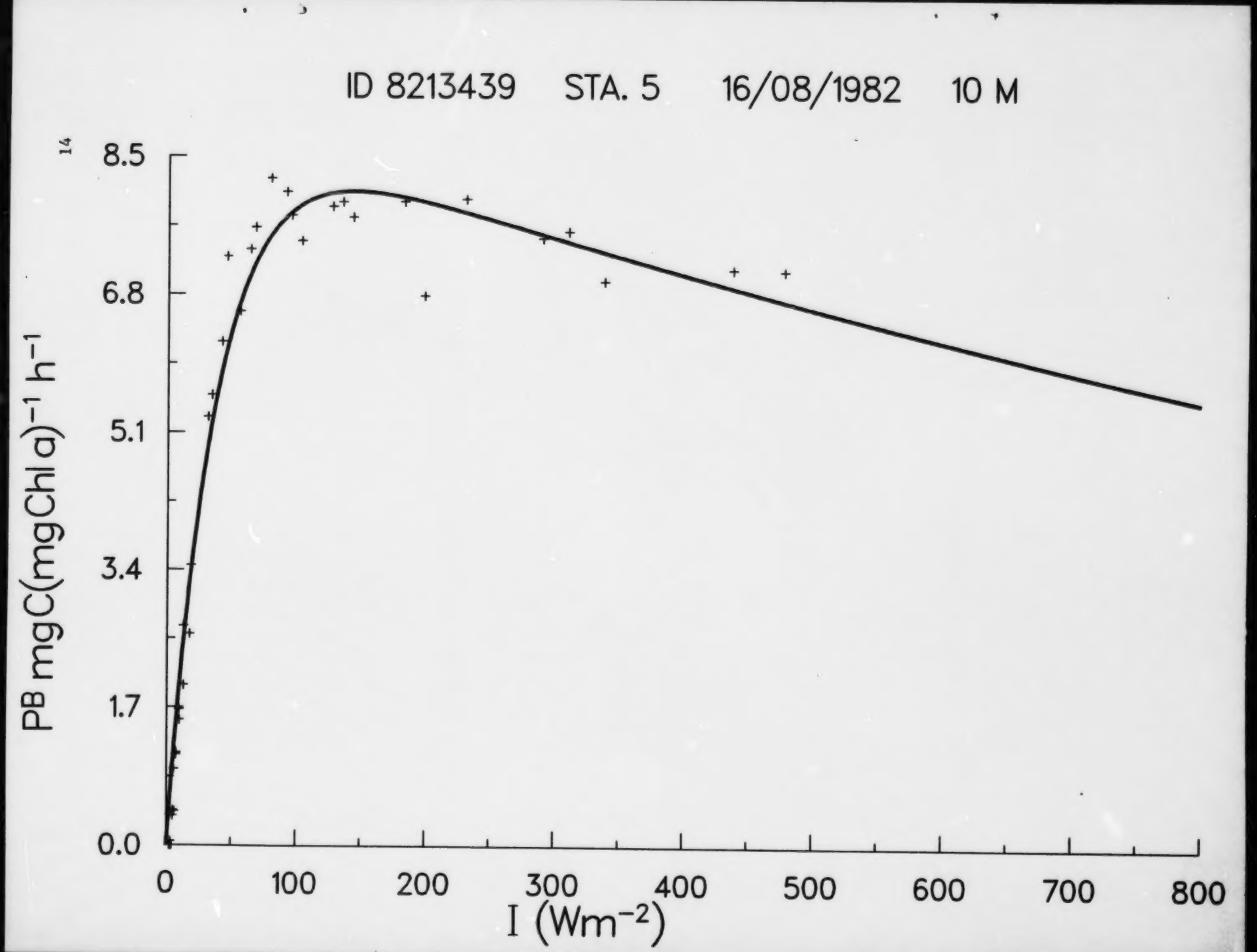
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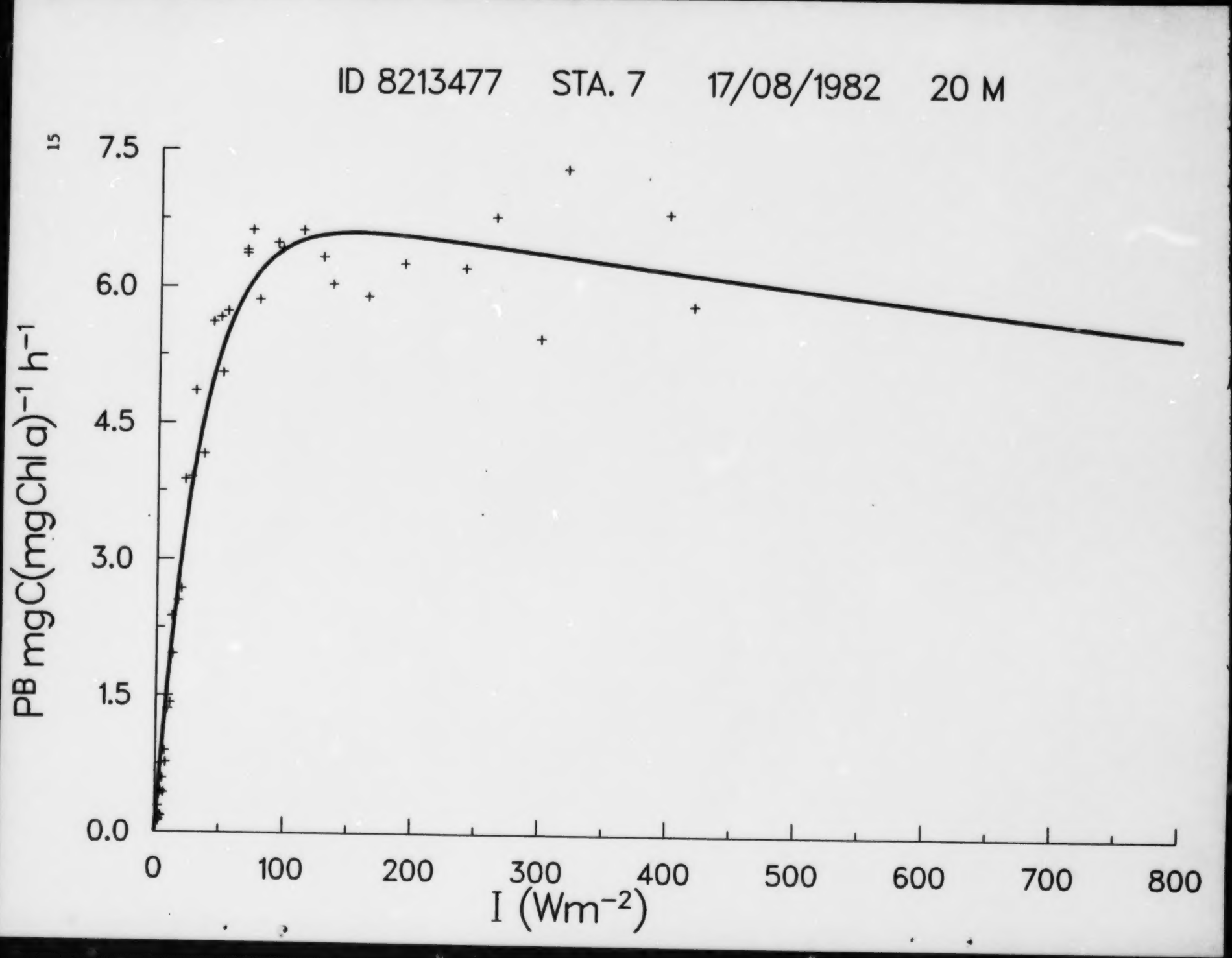
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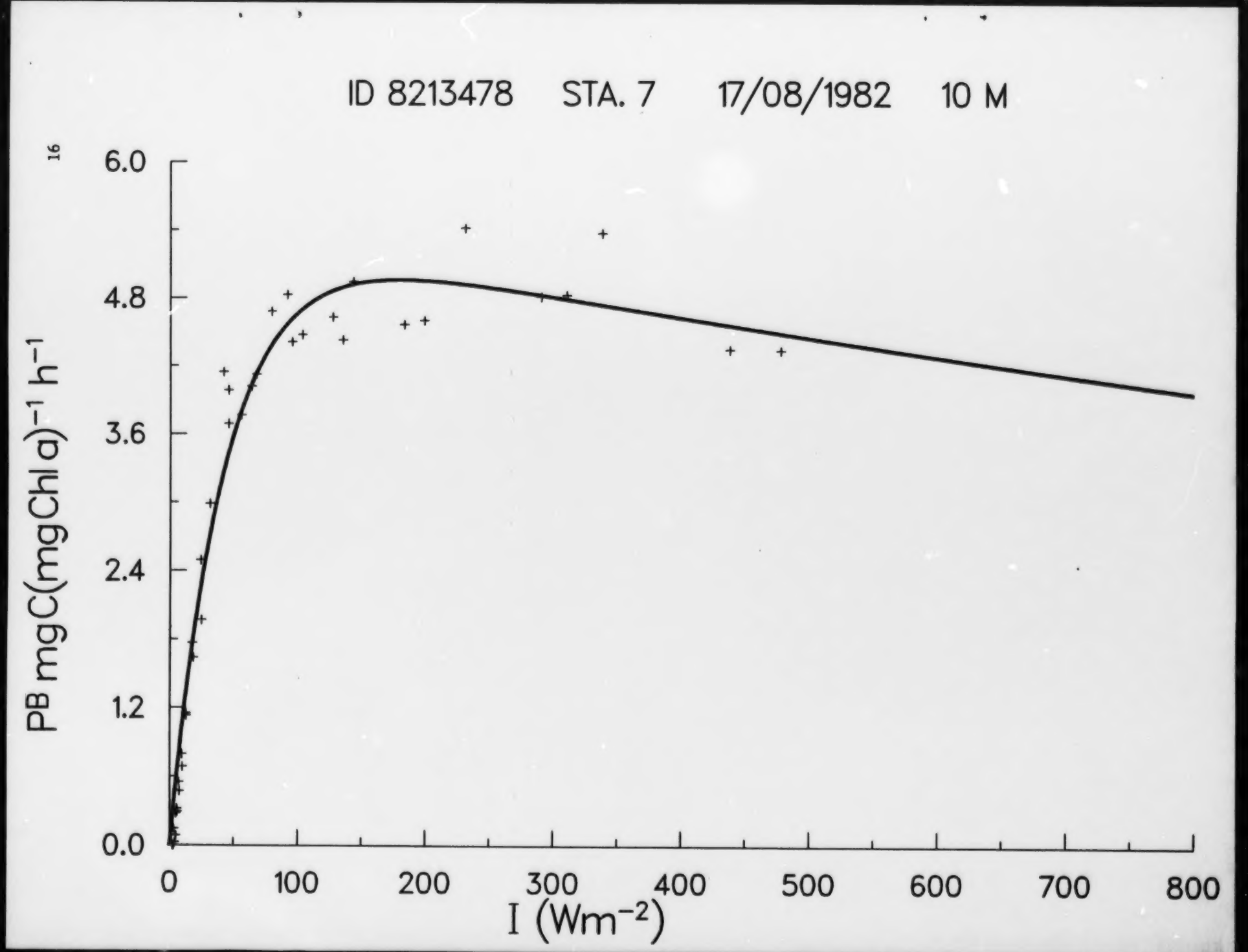
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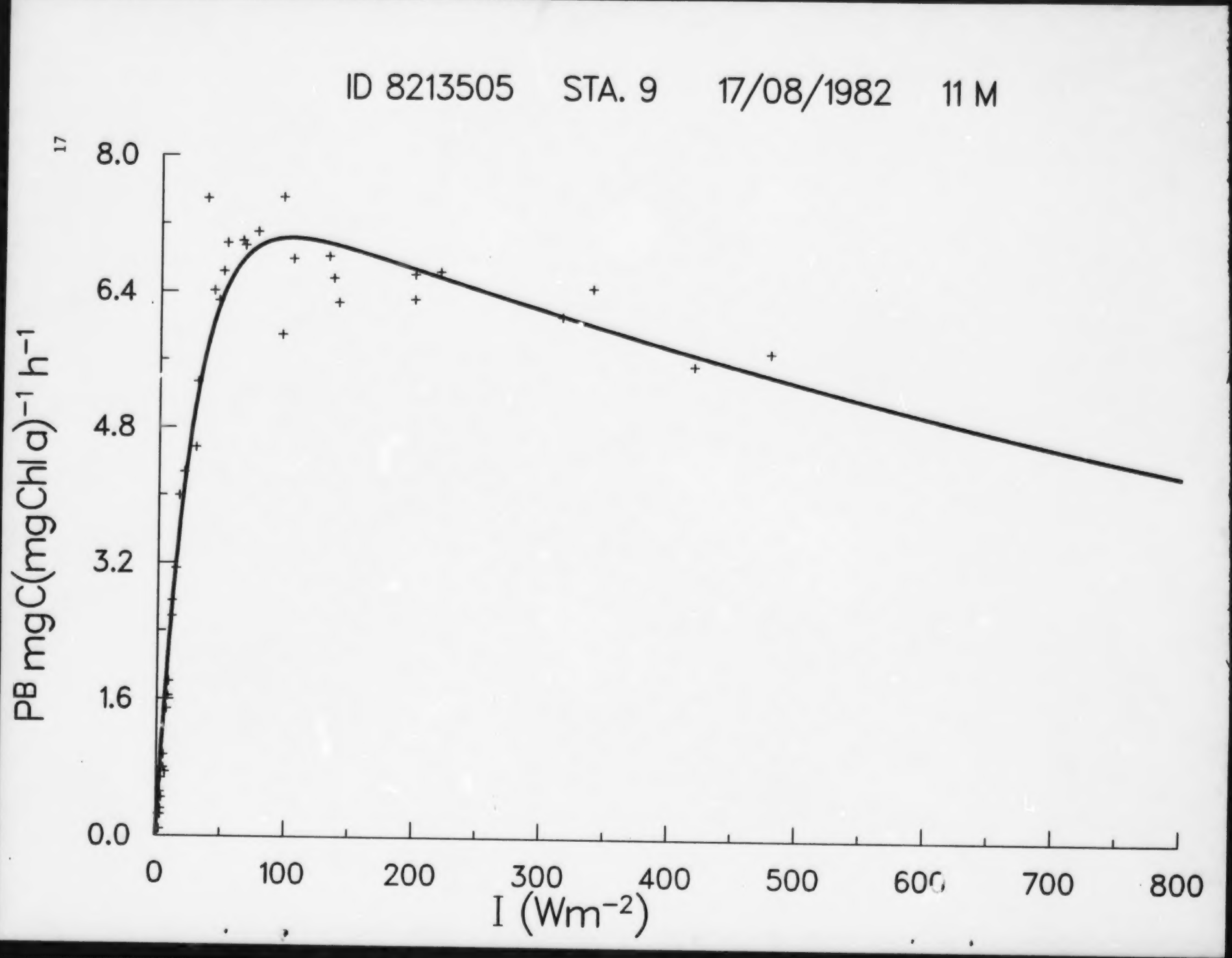
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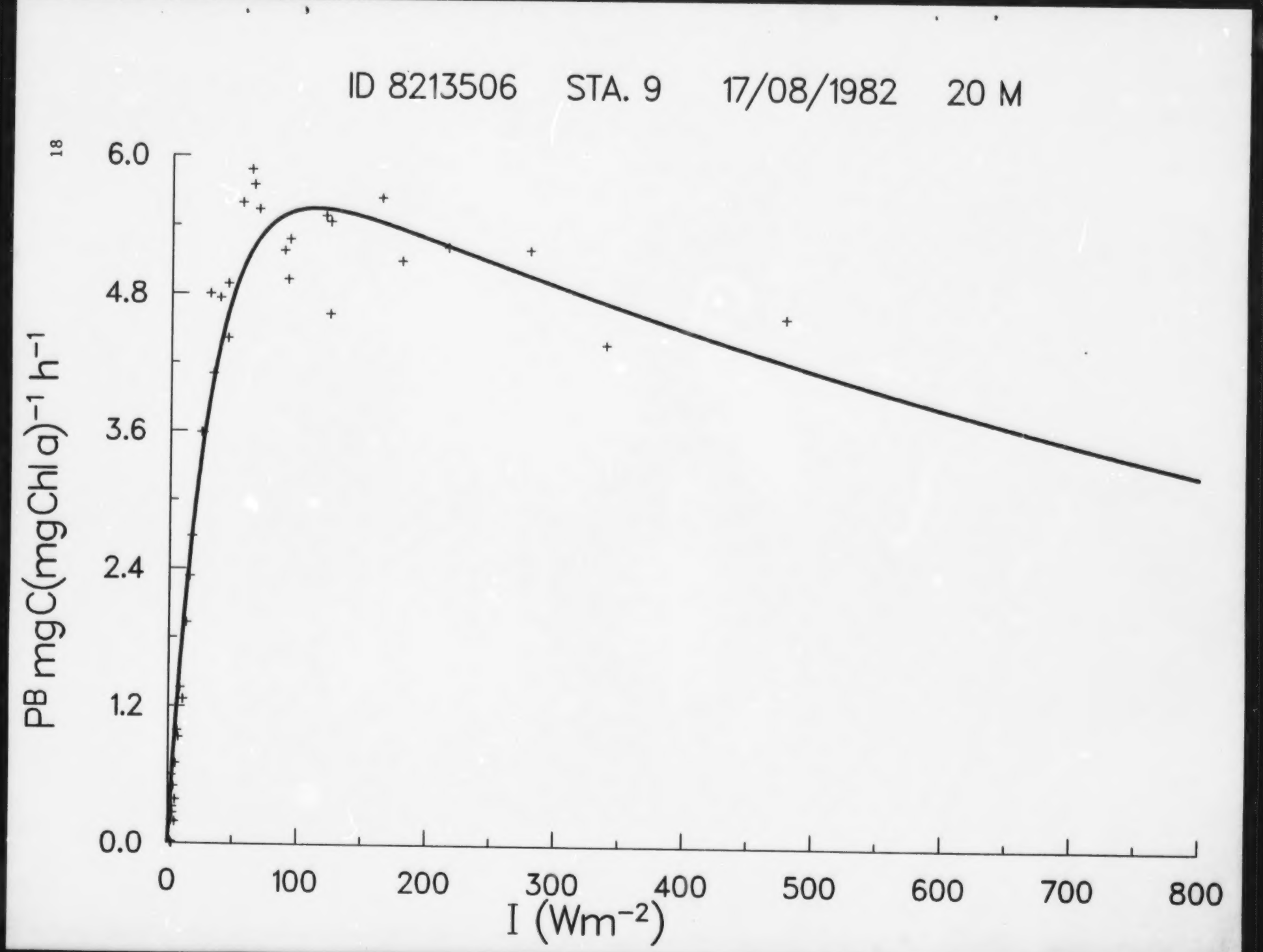
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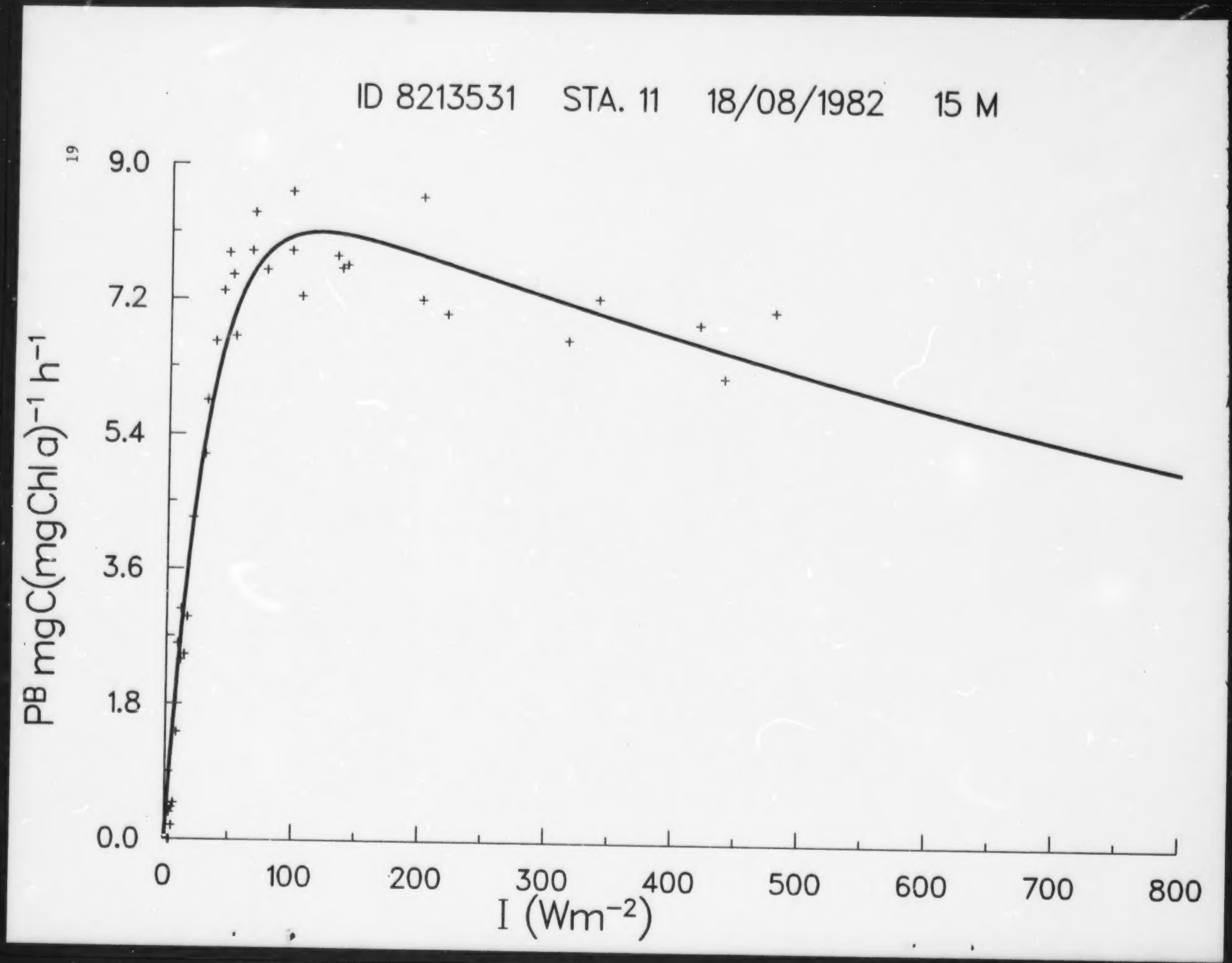
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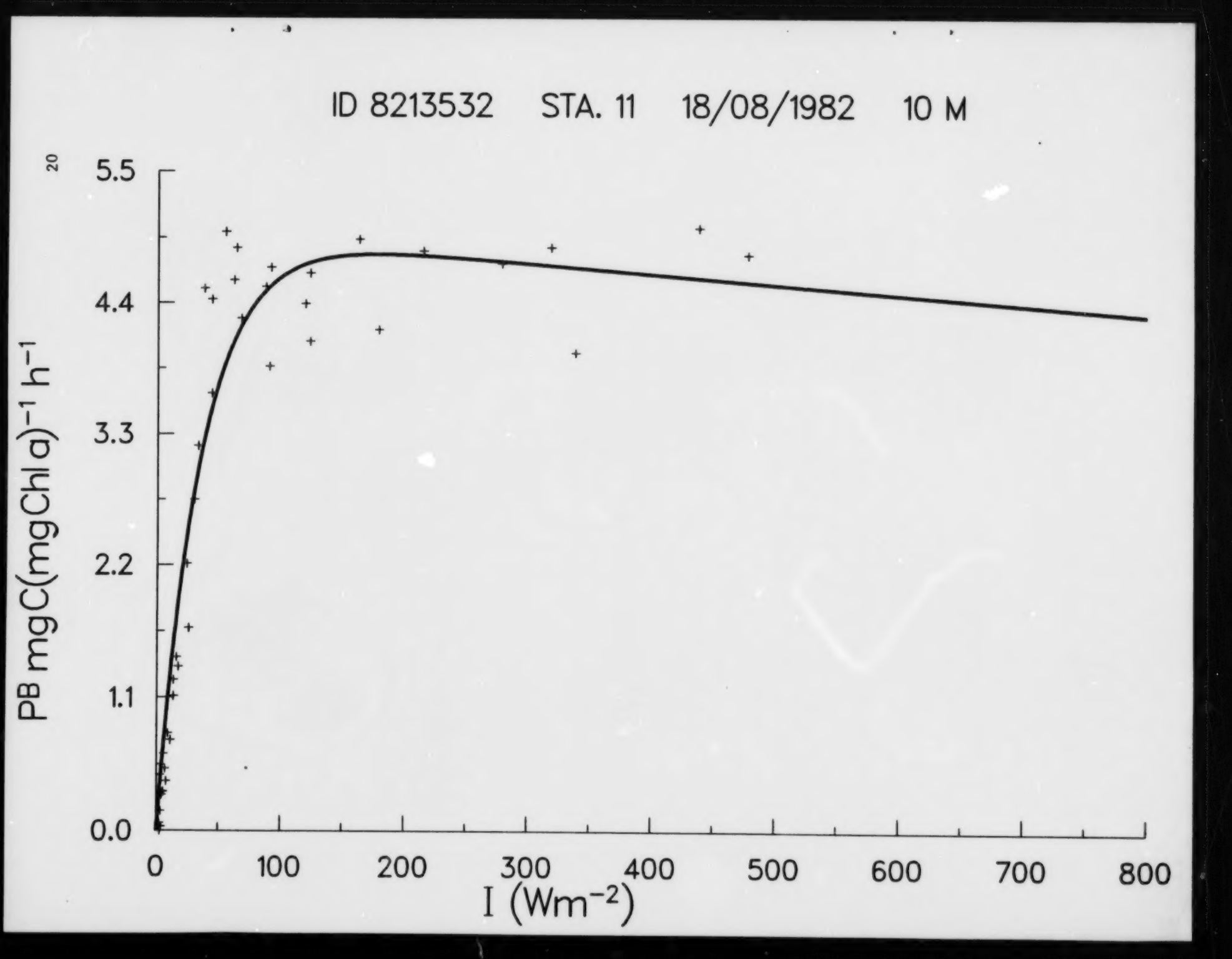
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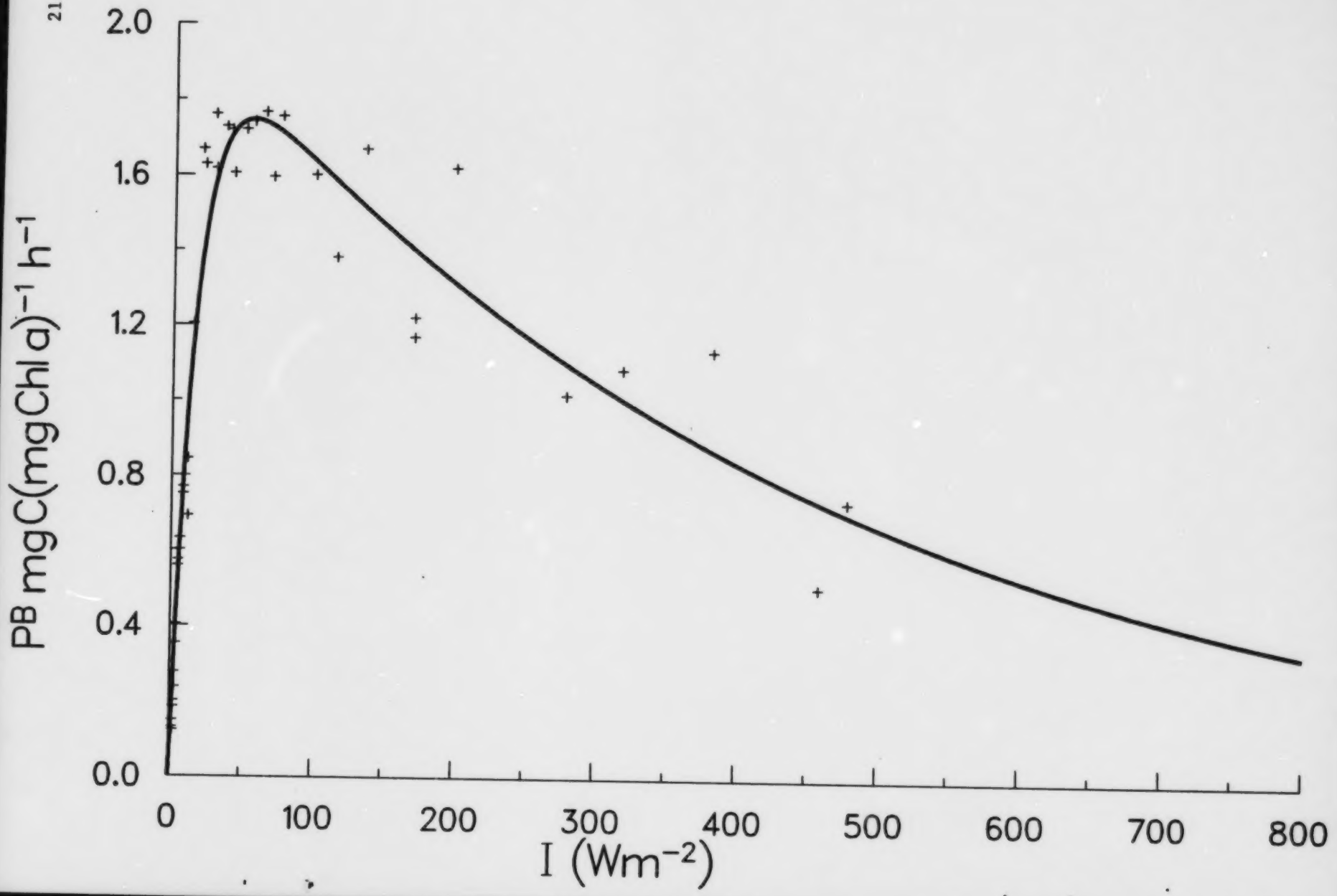

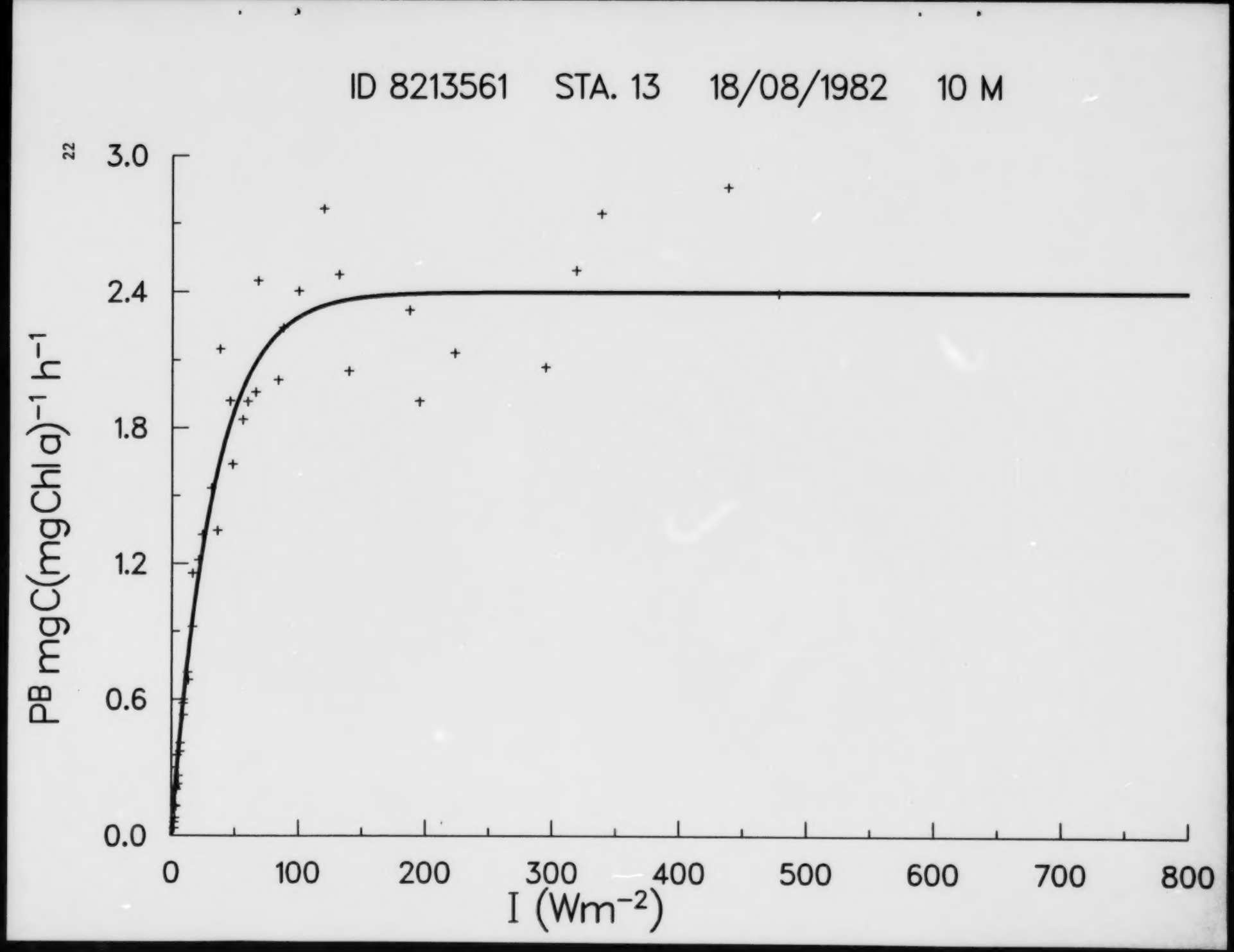
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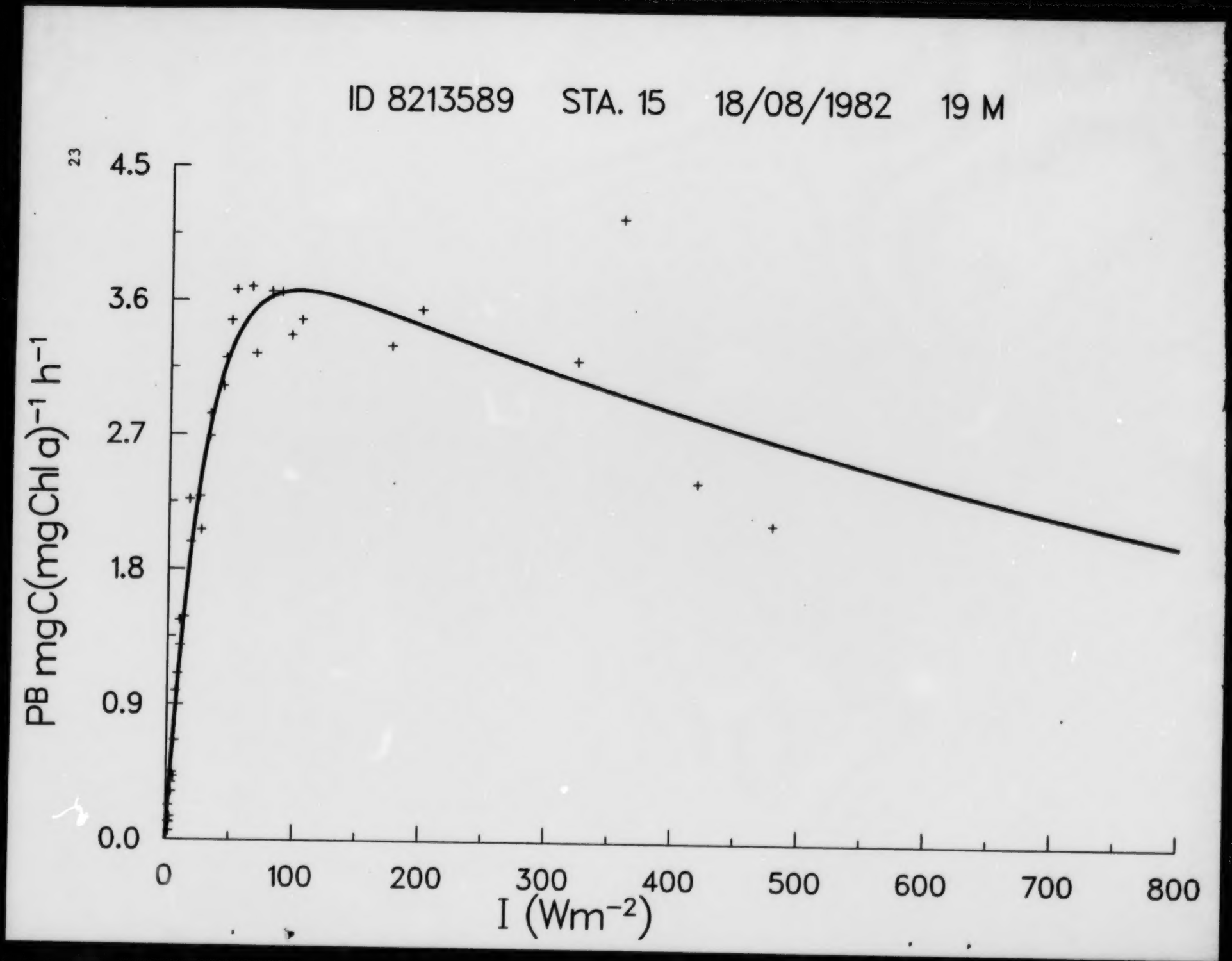
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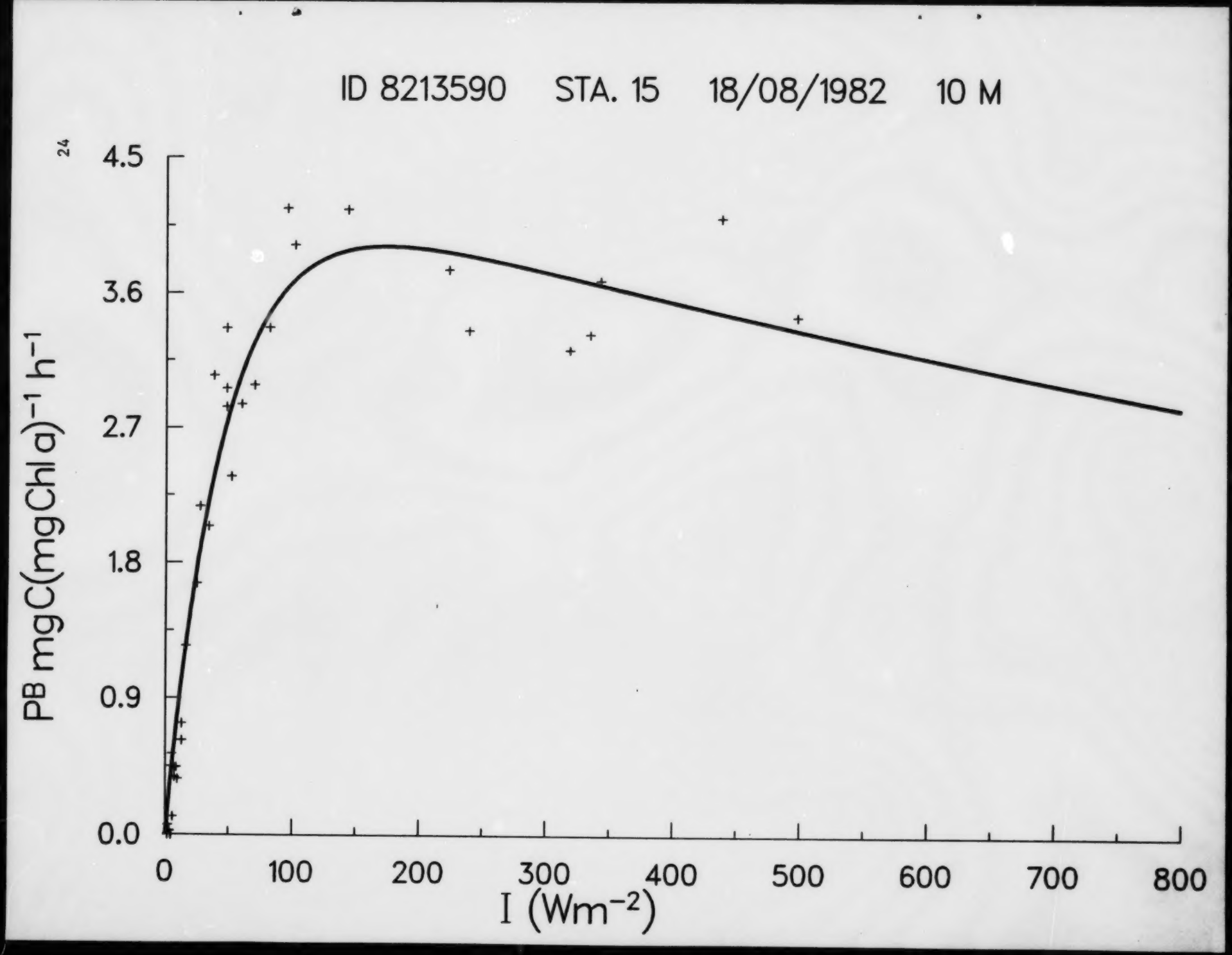
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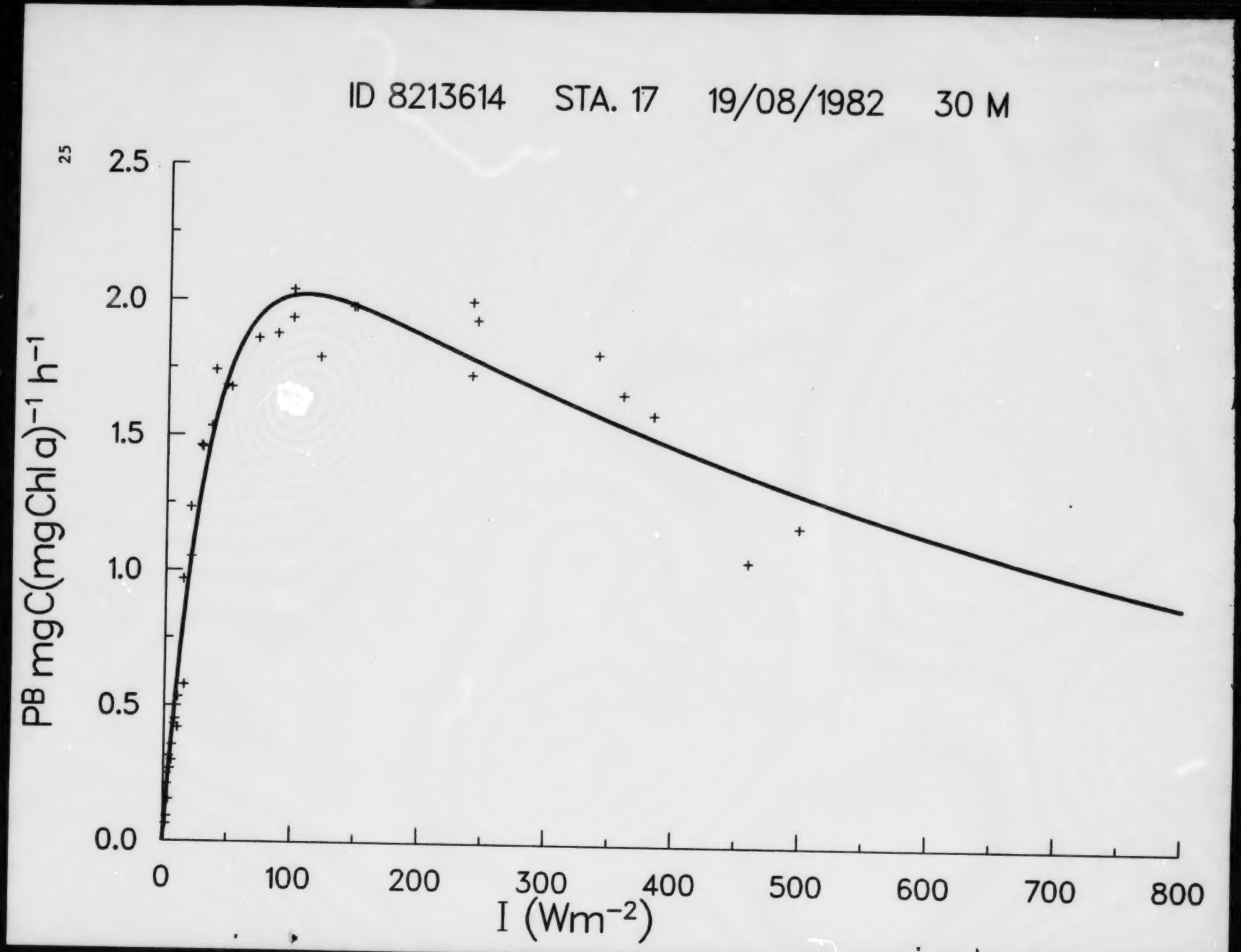
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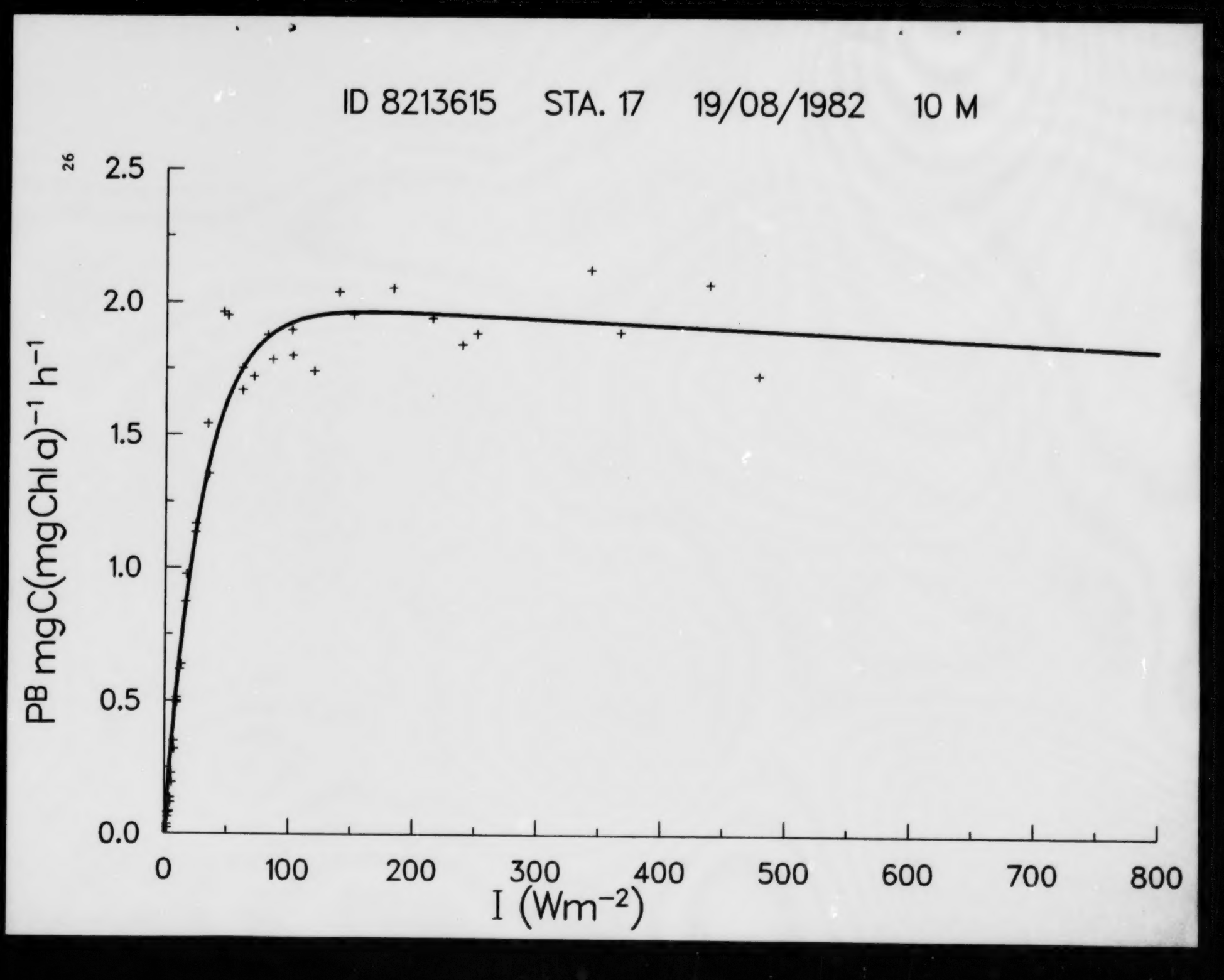
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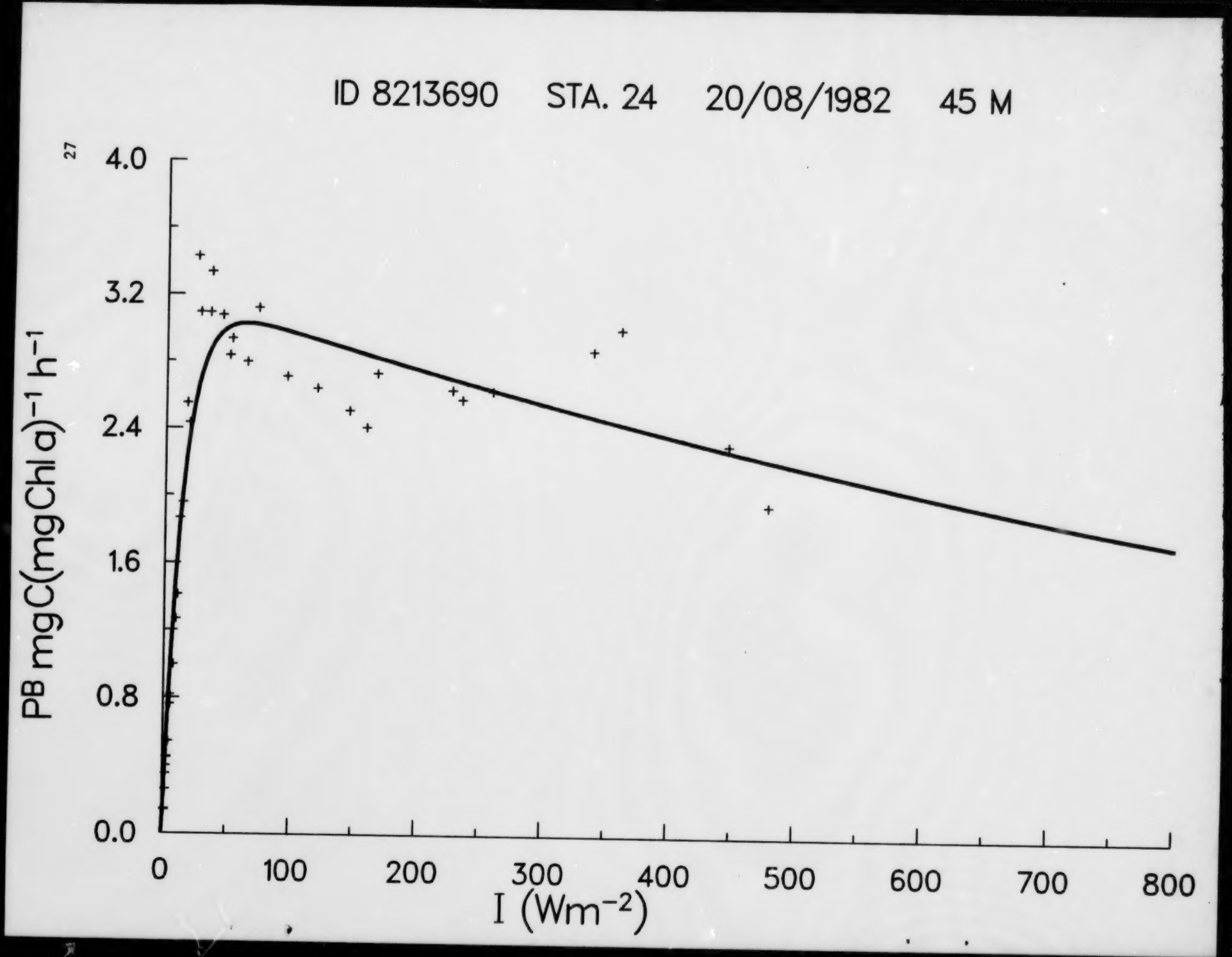
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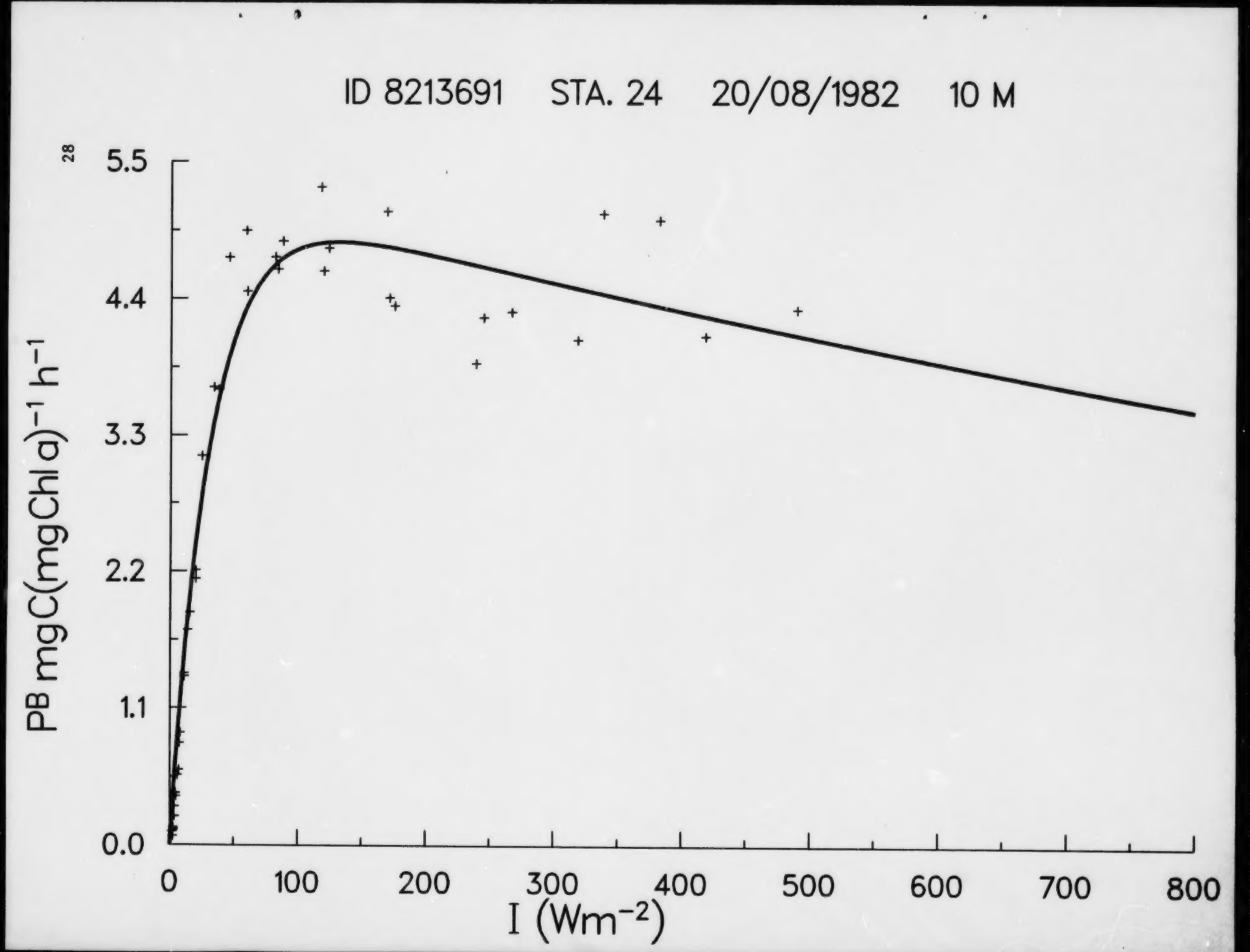
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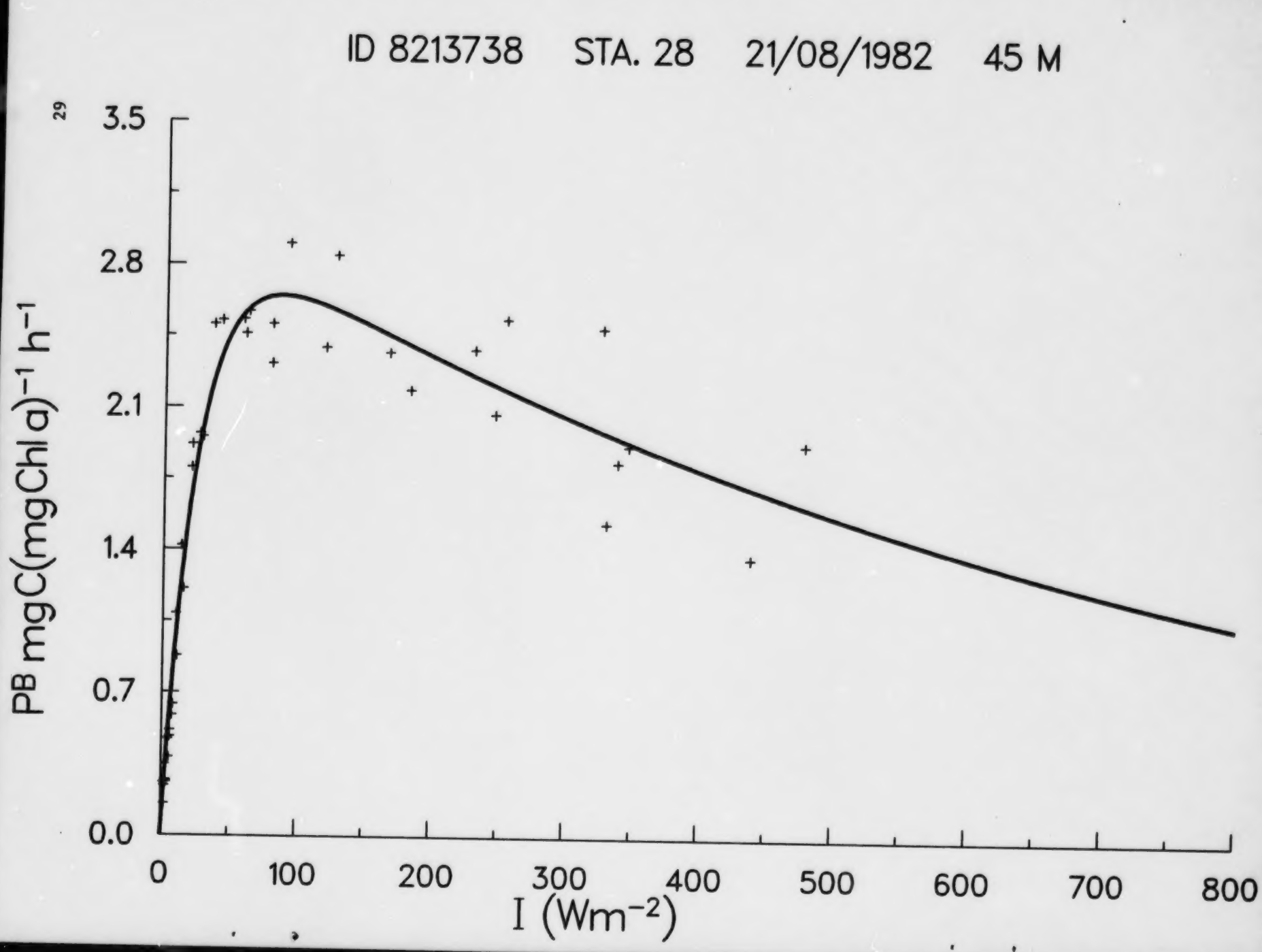
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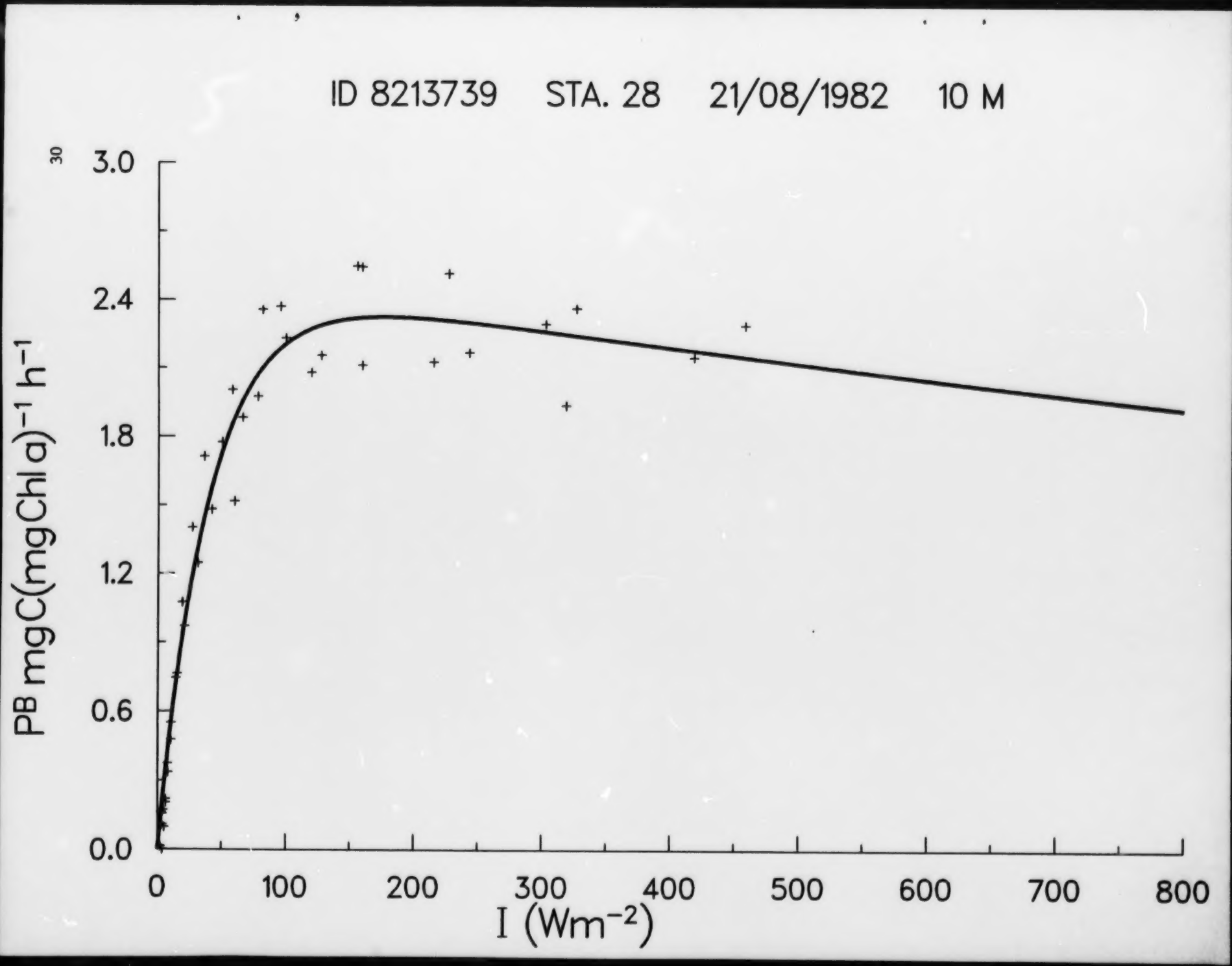
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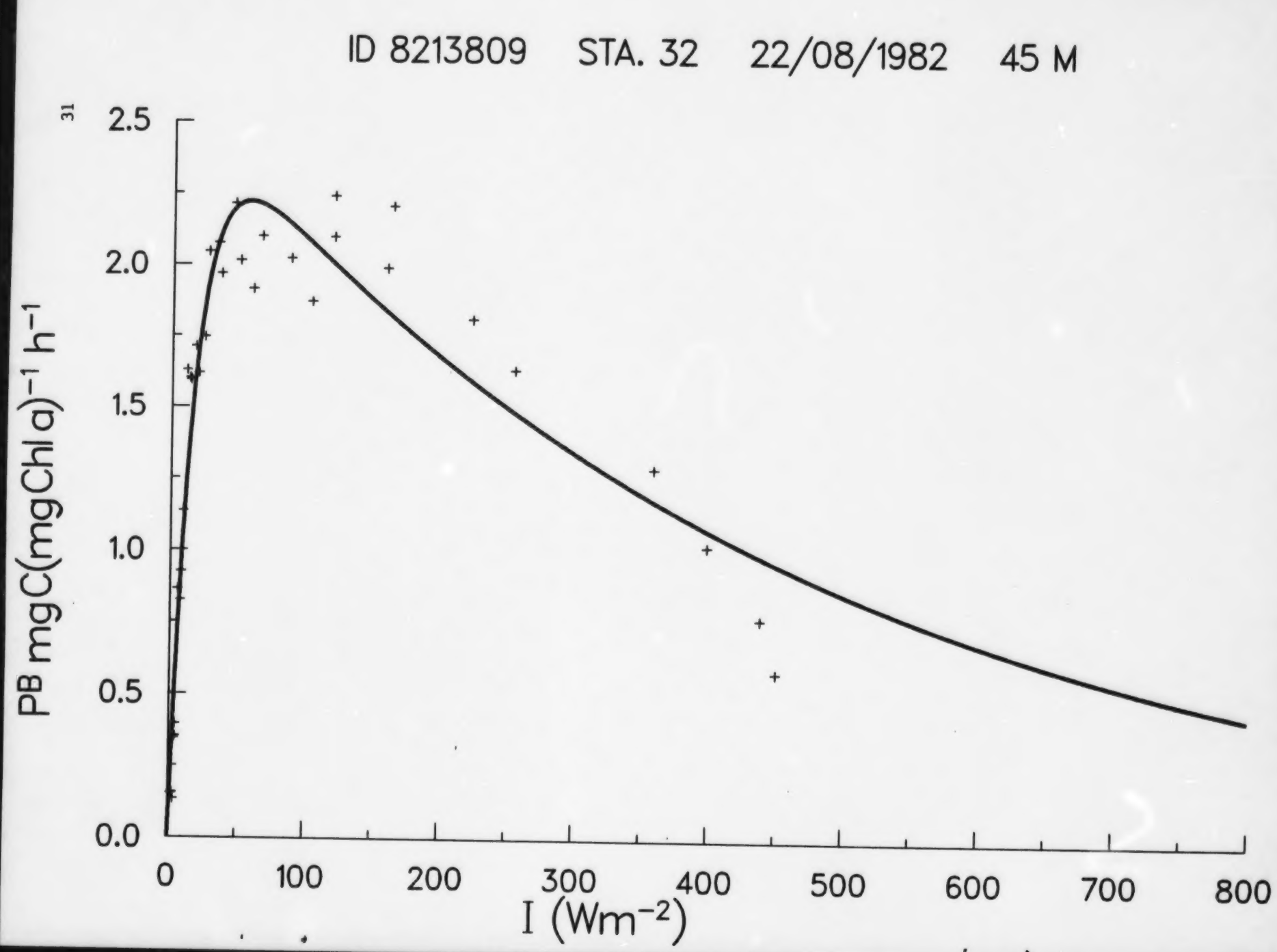
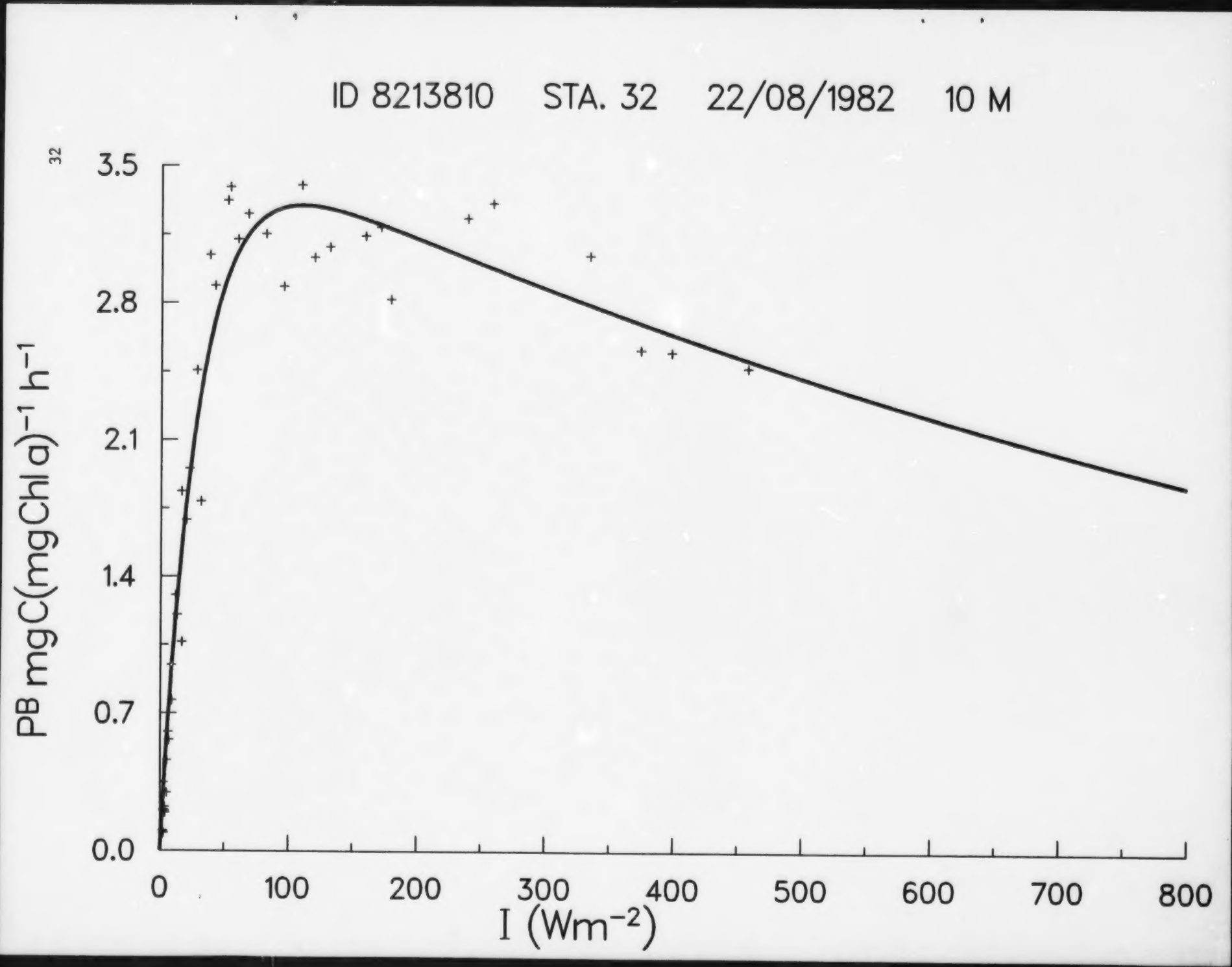
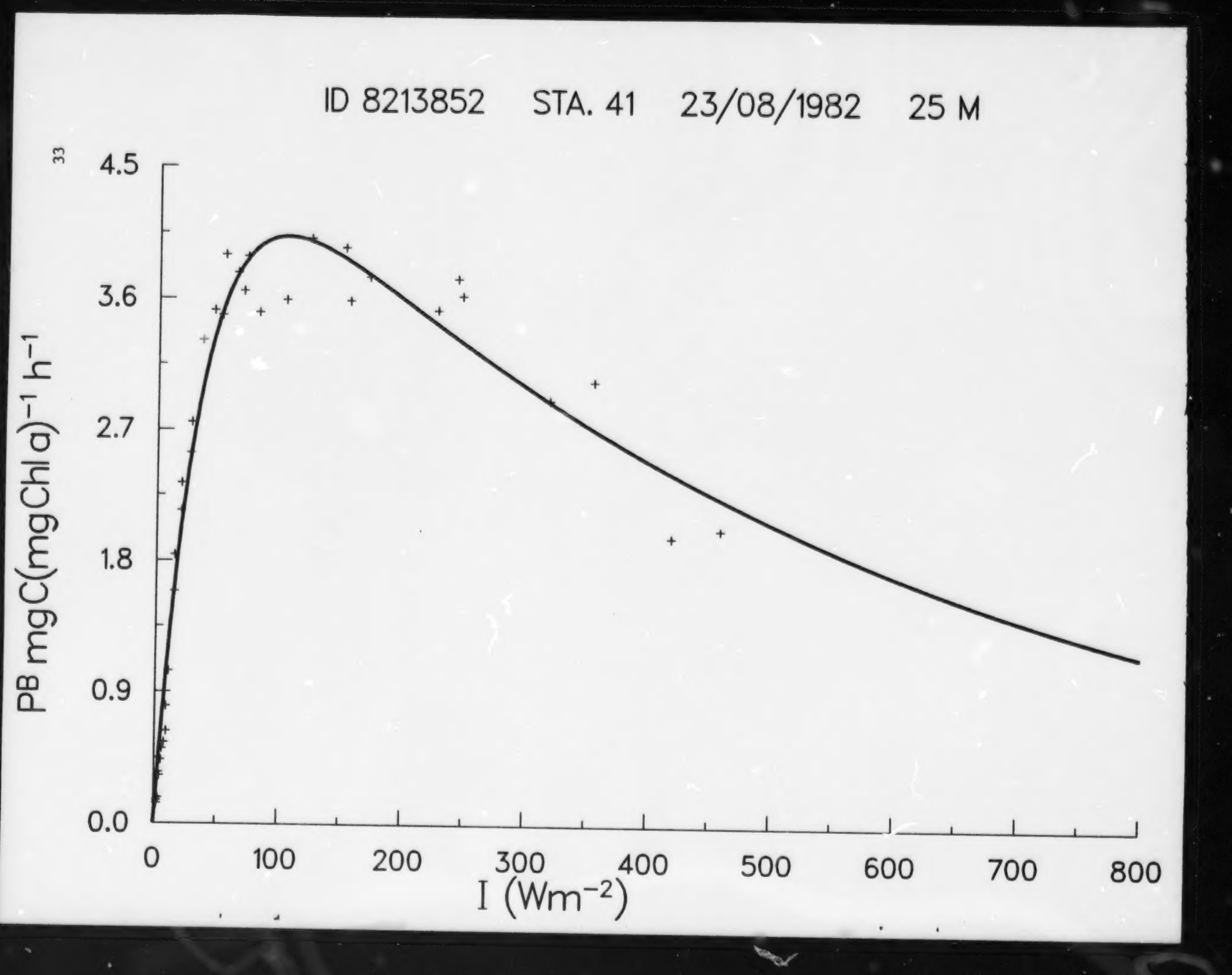
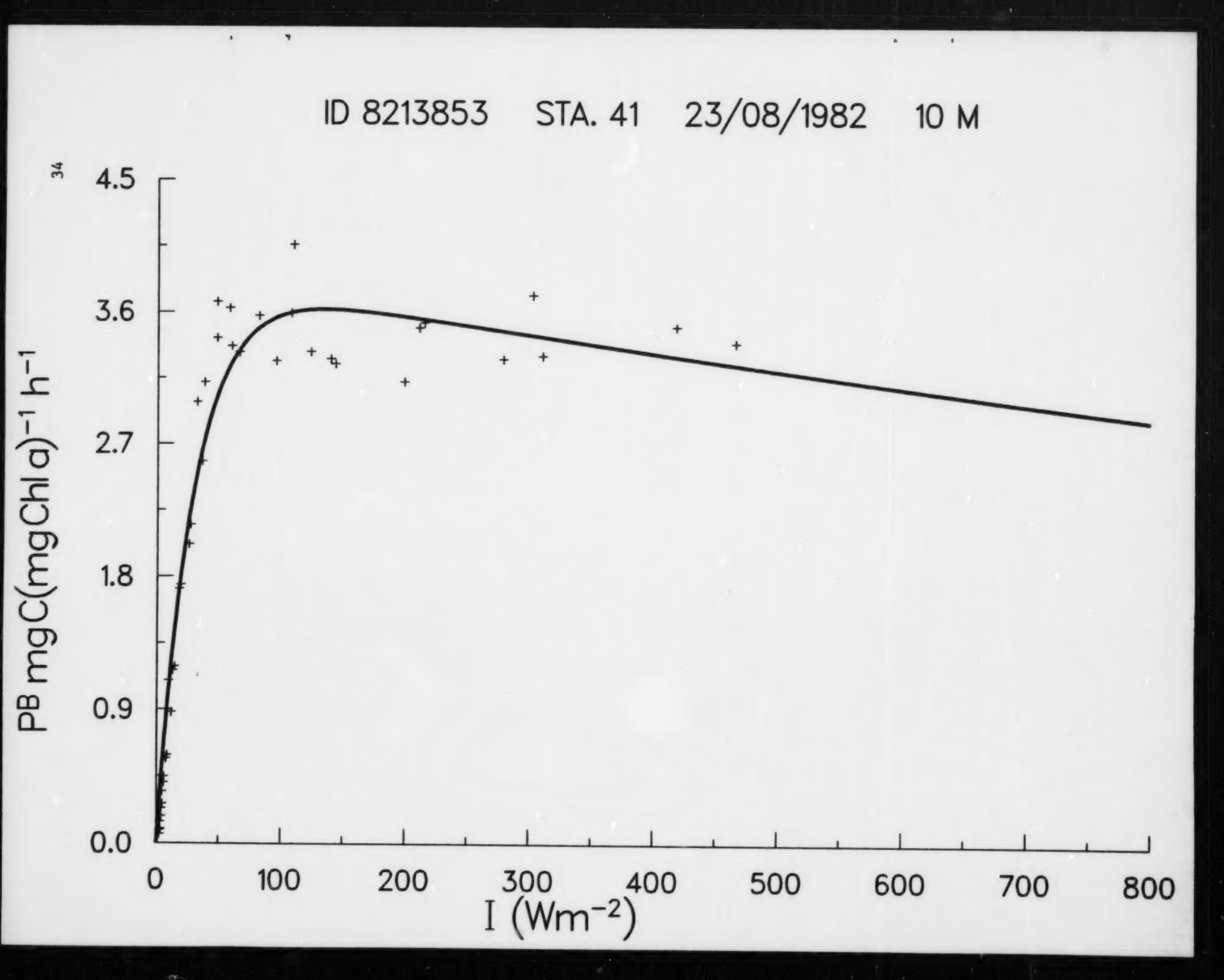
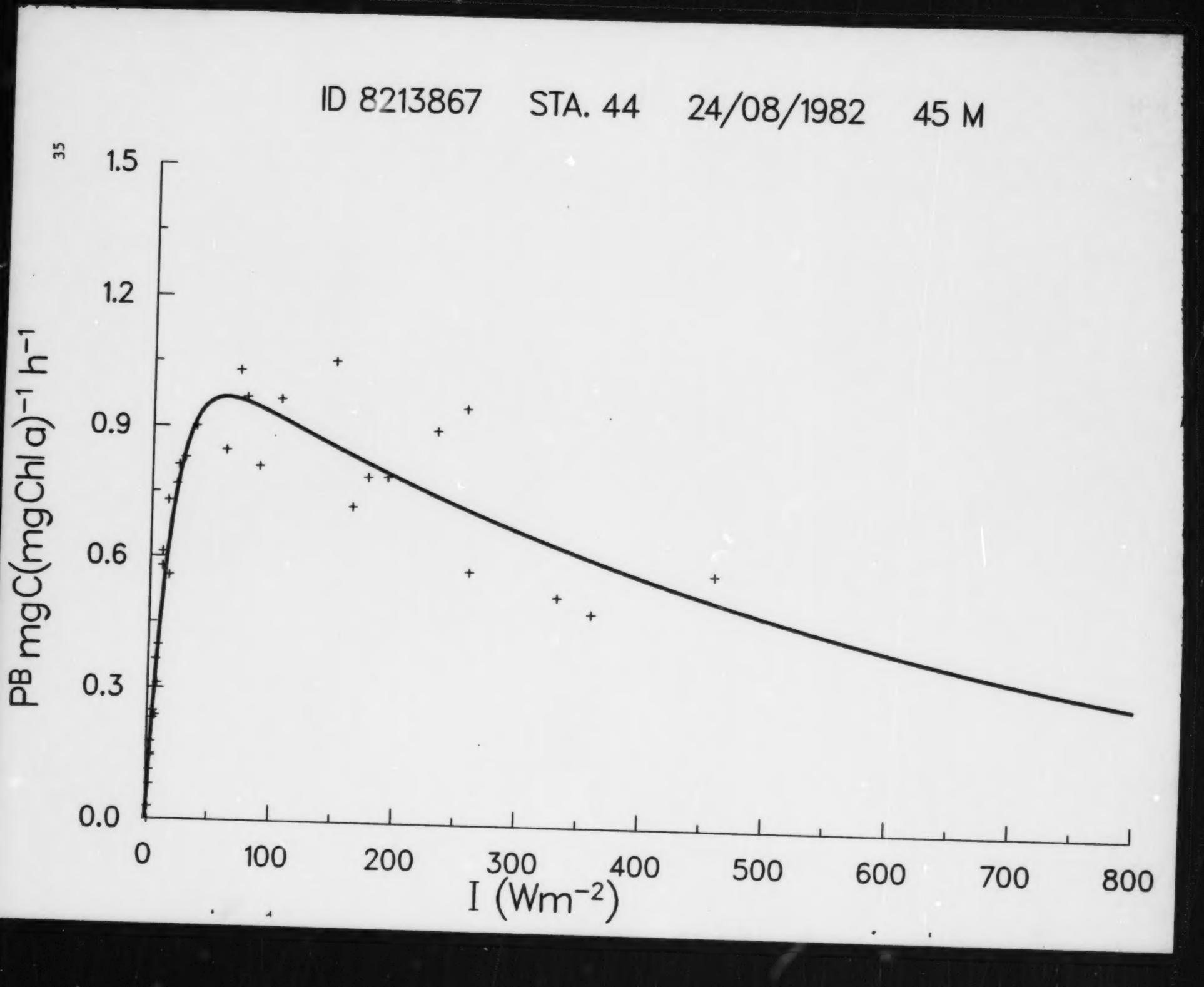
1.8
1.2
0.6
0.0
PB mgC(mgChl a)$^{-1}$ h^{-1}
0
100
200
300
400
500
600
700
800
I (Wm^{-2})

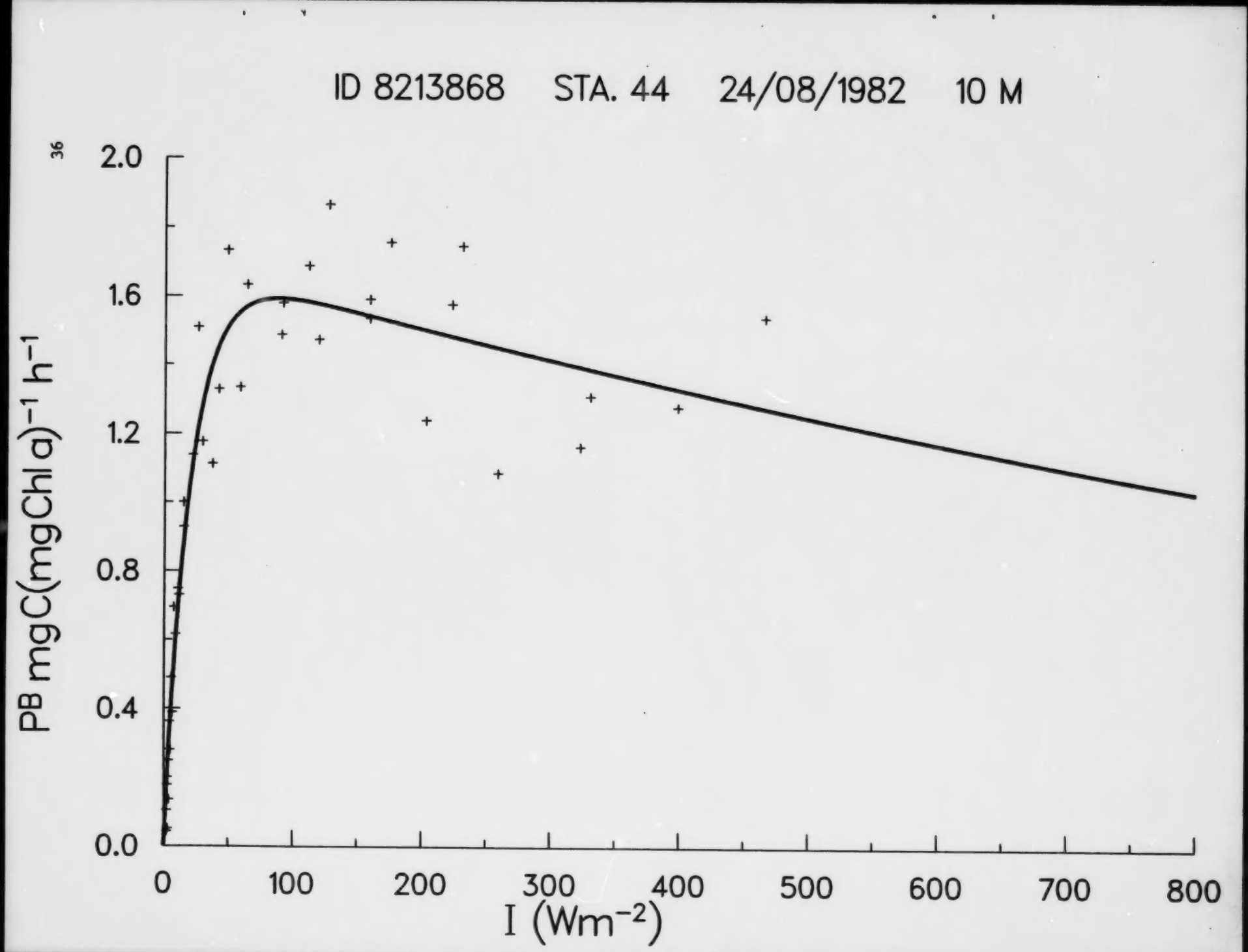

ID 8213809 STA. 32 22/08/1982 45 M
PB mgC(mgChl a)$^{-1}$ h^{-1}
2.5
2.0
1.5
1.0
0.5
0.0
0
100
200
300
400
500
600
700
800
I (Wm^{-2})

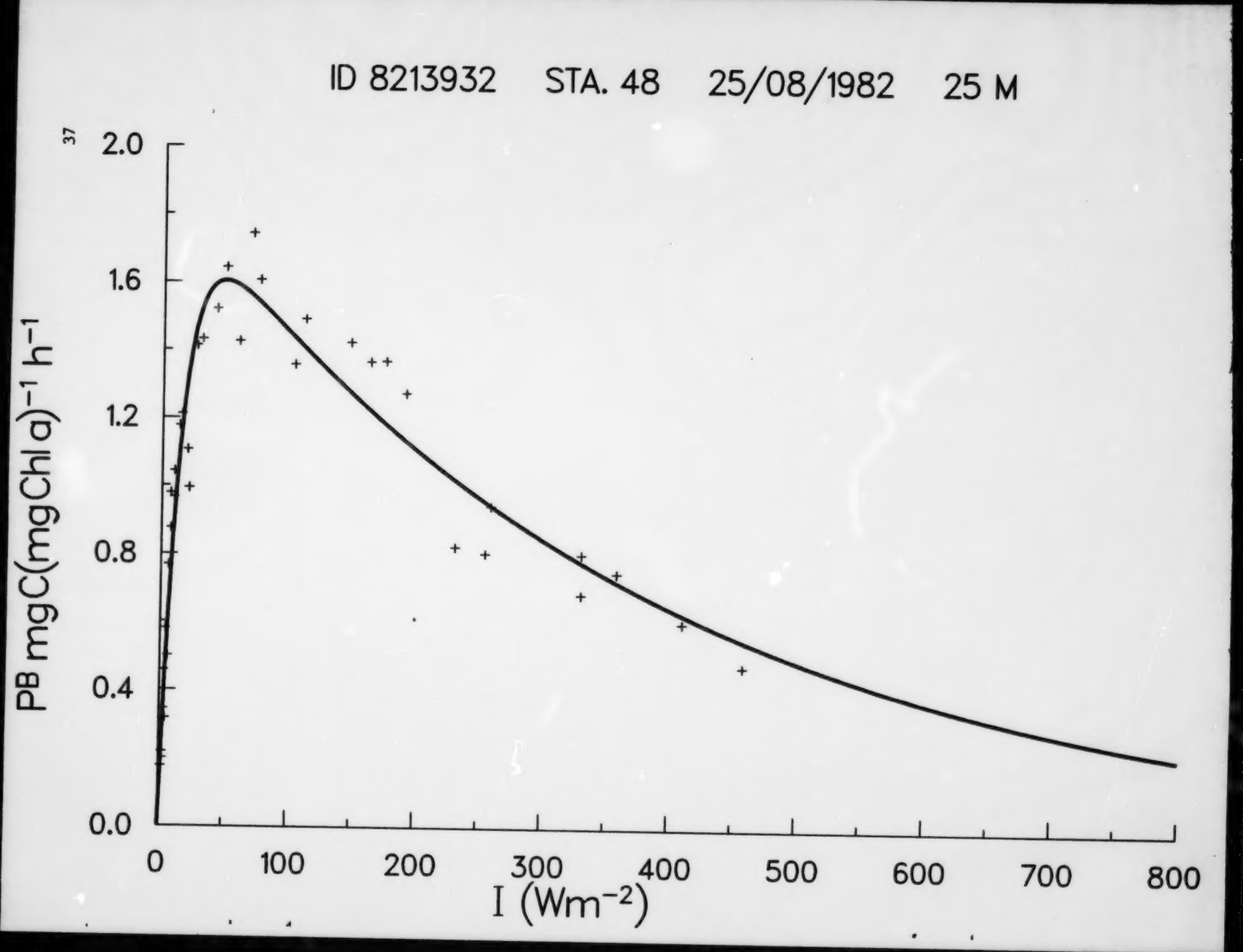

ID 8213810 STA. 32 22/08/1982 10 M
32
3.5
2.8
2.1
1.4
0.7
0.0
PB mgC(mgChl a)$^{-1}$ h^{-1}
0
100
200
300
400
500
600
700
800
I (Wm^{-2})

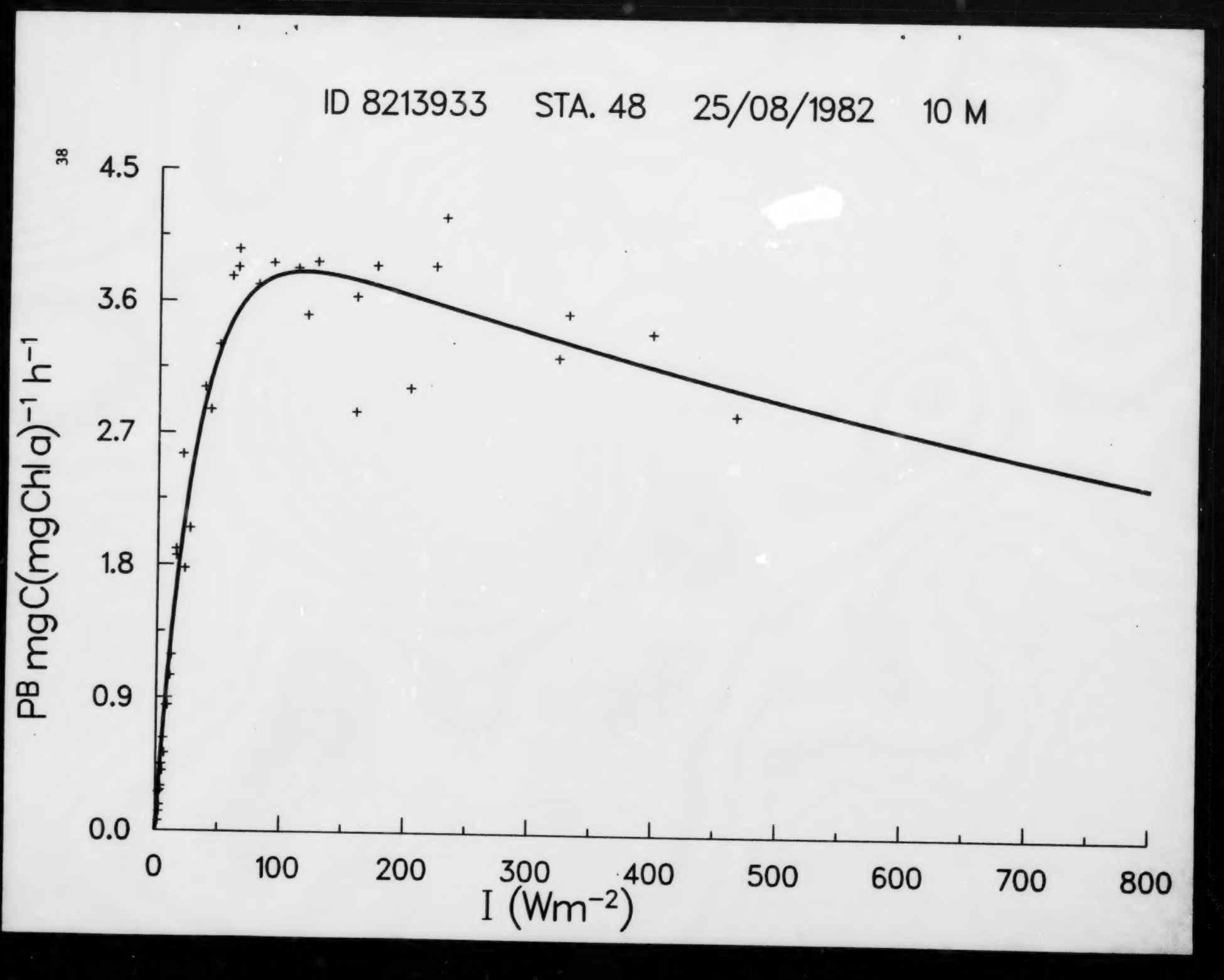

ID 8213852 STA. 41 23/08/1982 25 M
^{33}
4.5
3.6
2.7
1.8
0.9
0.0
P^B mgC(mgChl a)$^{-1}$ h^{-1}
0
100
200
300
400
500
600
700
800
I (Wm^{-2})

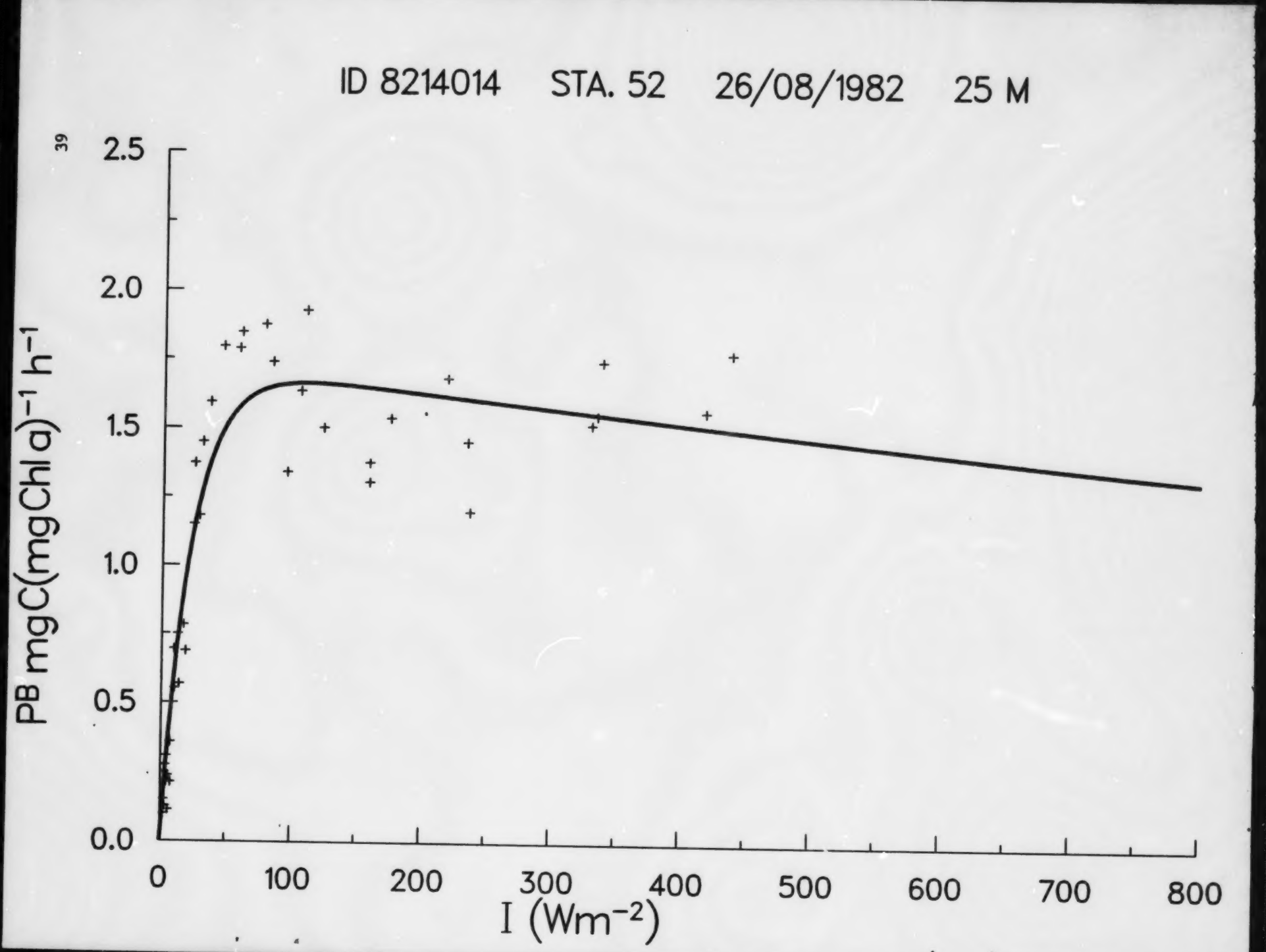

ID 8213853 STA. 41 23/08/1982 10 M
34
PB mgC(mgChl a)$^{-1}$ h^{-1}
4.5
3.6
2.7
1.8
0.9
0.0
0
100
200
300
400
500
600
700
800
I (Wm^{-2})

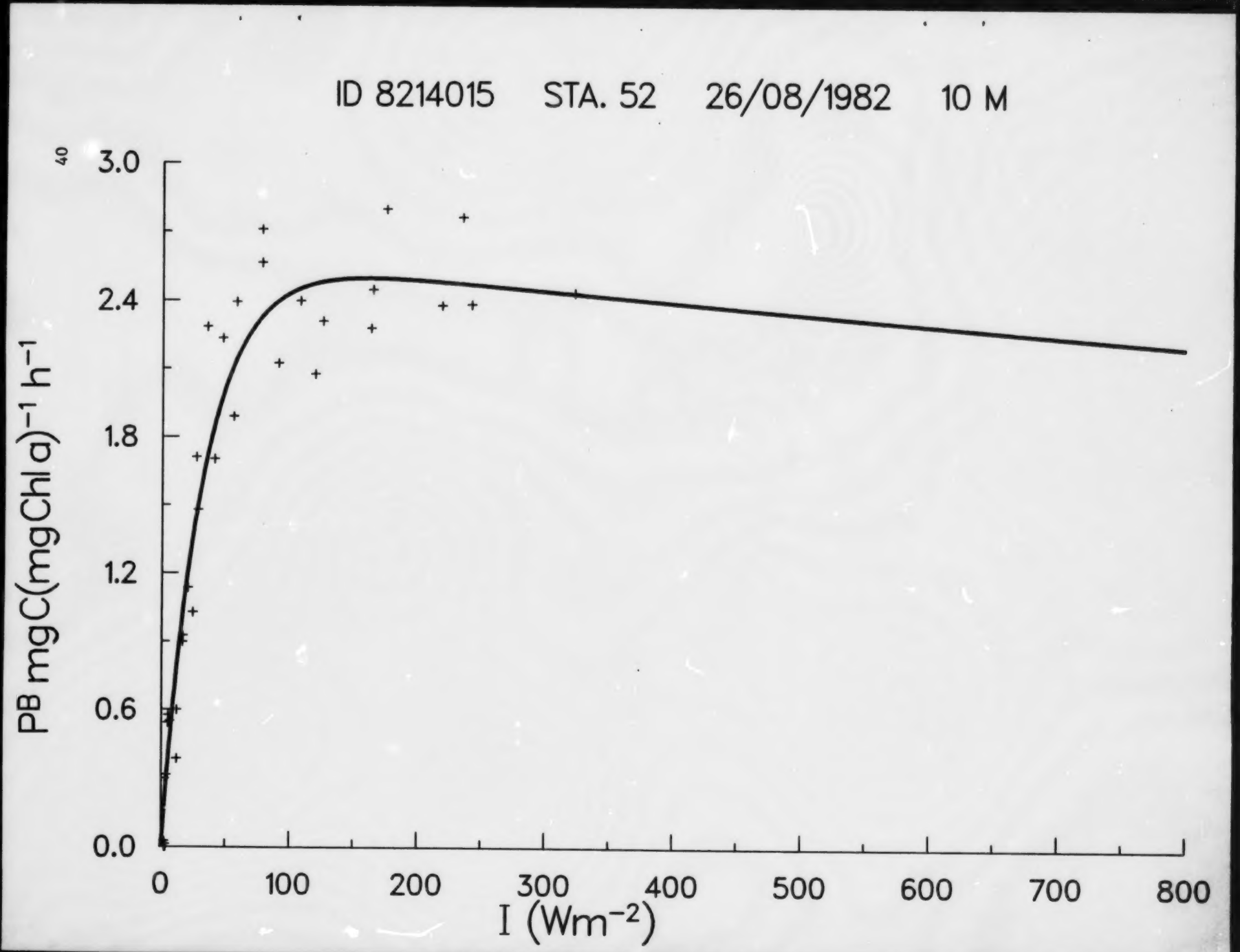

ID 8213867 STA. 44 24/08/1982 45 M
35
1.5
1.2
0.9
0.6
0.3
0.0
PB mgC(mgChl a)$^{-1}$ h^{-1}
0
100
200
300
400
500
600
700
800
I (Wm^{-2})

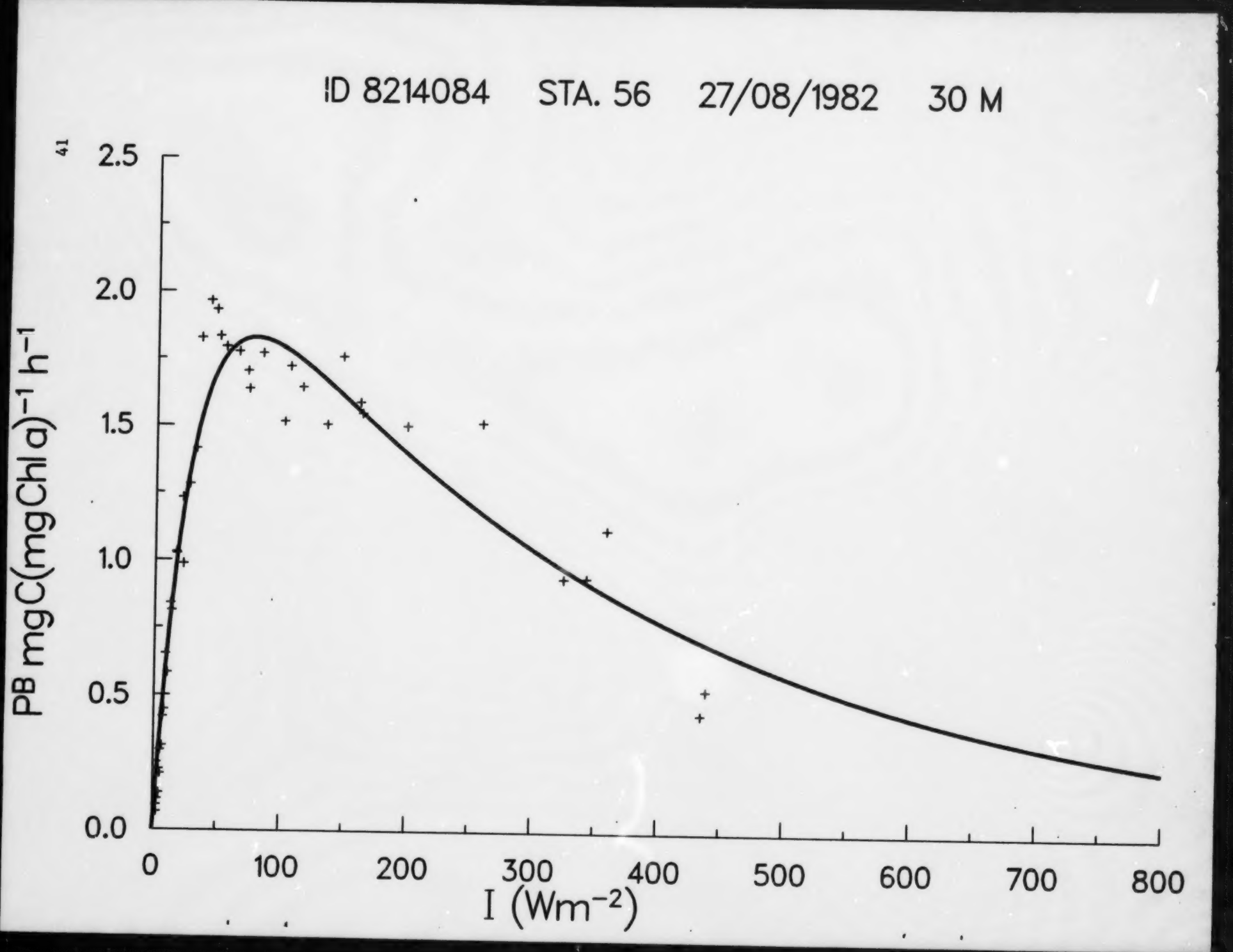

ID 8213868 STA. 44 24/08/1982 10 M
36
PB mgC(mgChl a)$^{-1}$ h^{-1}
2.0
1.6
1.2
0.8
0.4
0.0
0
100
200
300
400
500
600
700
800
I (Wm^{-2})

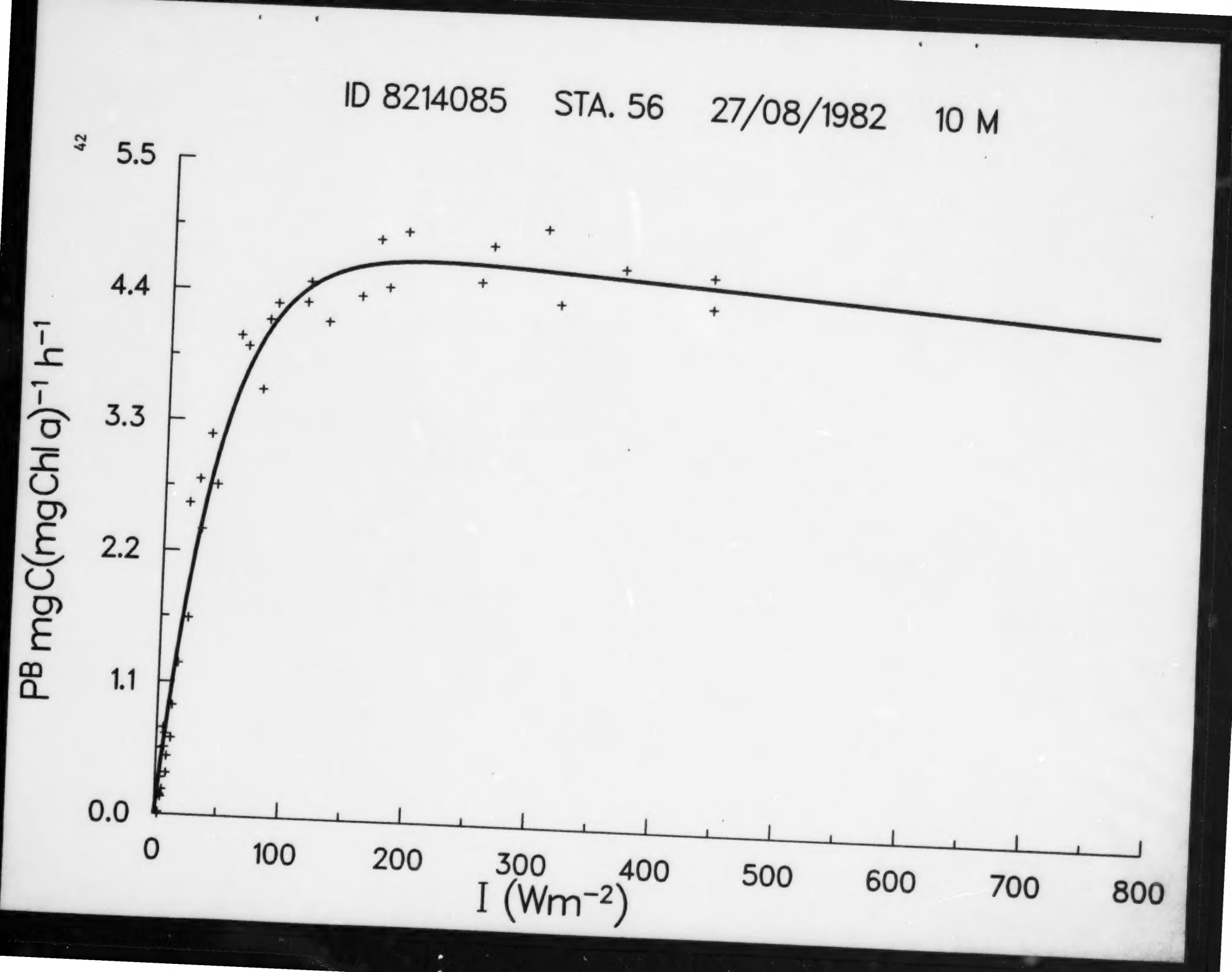

ID 8213932 STA. 48 25/08/1982 25 M
PB mgC(mgChl a)$^{-1}$ h^{-1}
2.0
1.6
1.2
0.8
0.4
0.0
0
100
200
300
400
500
600
700
800
I (Wm^{-2})

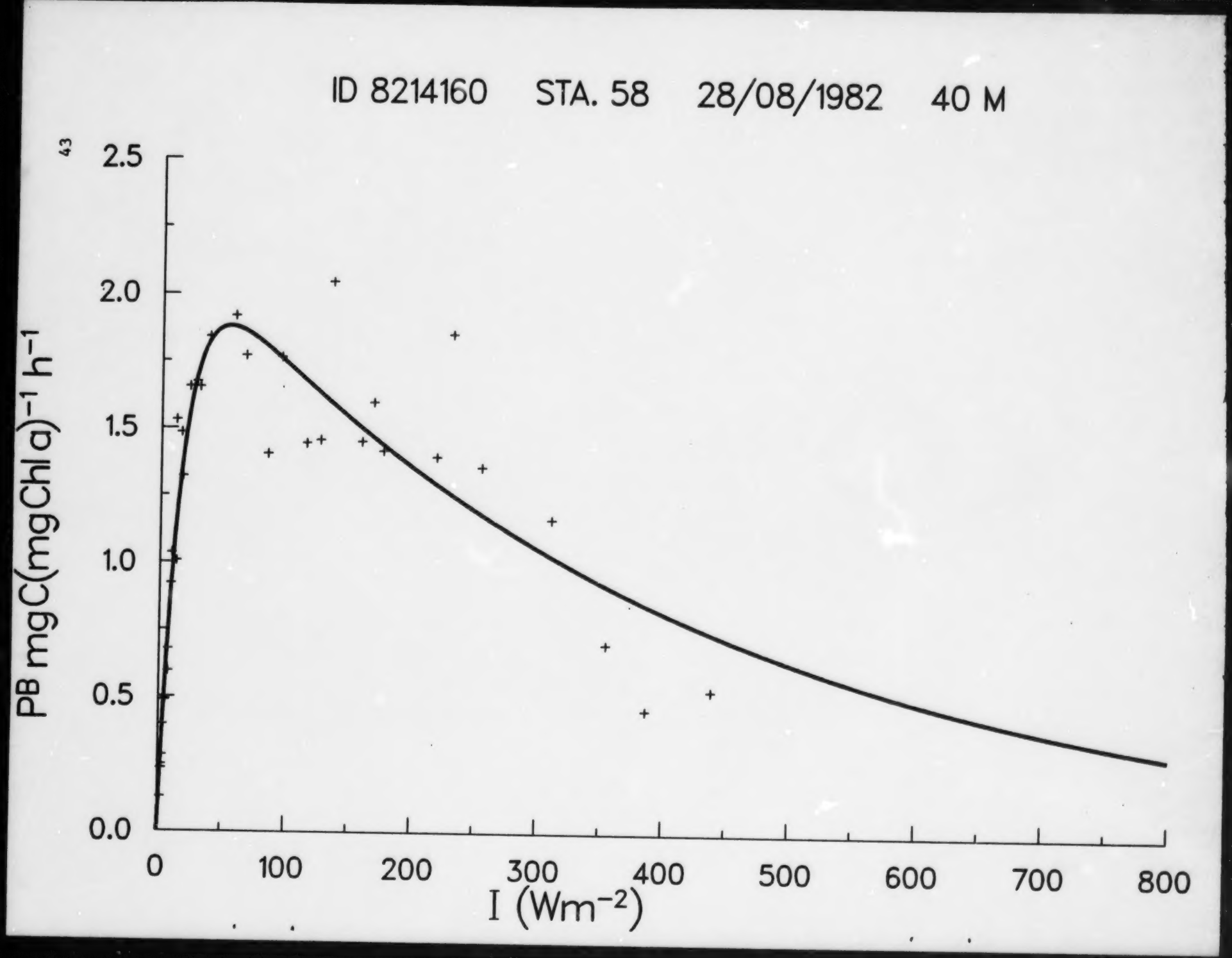

ID 8213933 STA. 48 25/08/1982 10 M
PB mgC(mgChl a)$^{-1}$ h^{-1}
4.5
3.6
2.7
1.8
0.9
0.0
0
100
200
300
400
500
600
700
800
I (Wm^{-2})

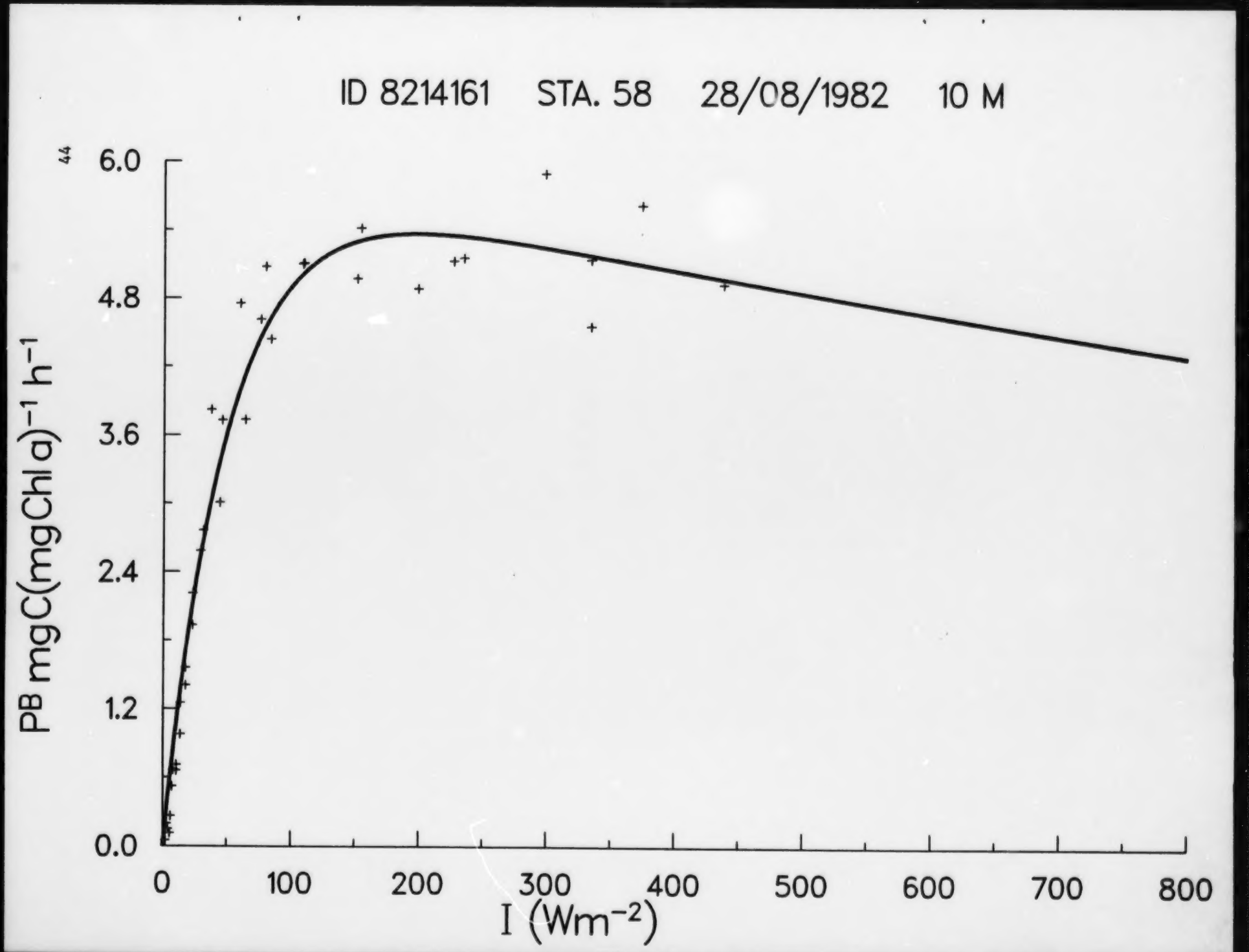

ID 8214014 STA. 52 26/08/1982 25 M
PB mgC(mgChl a)$^{-1}$ h^{-1}
2.5
2.0
1.5
1.0
0.5
0.0
0
100
200
300
400
500
600
700
800
I (Wm^{-2})

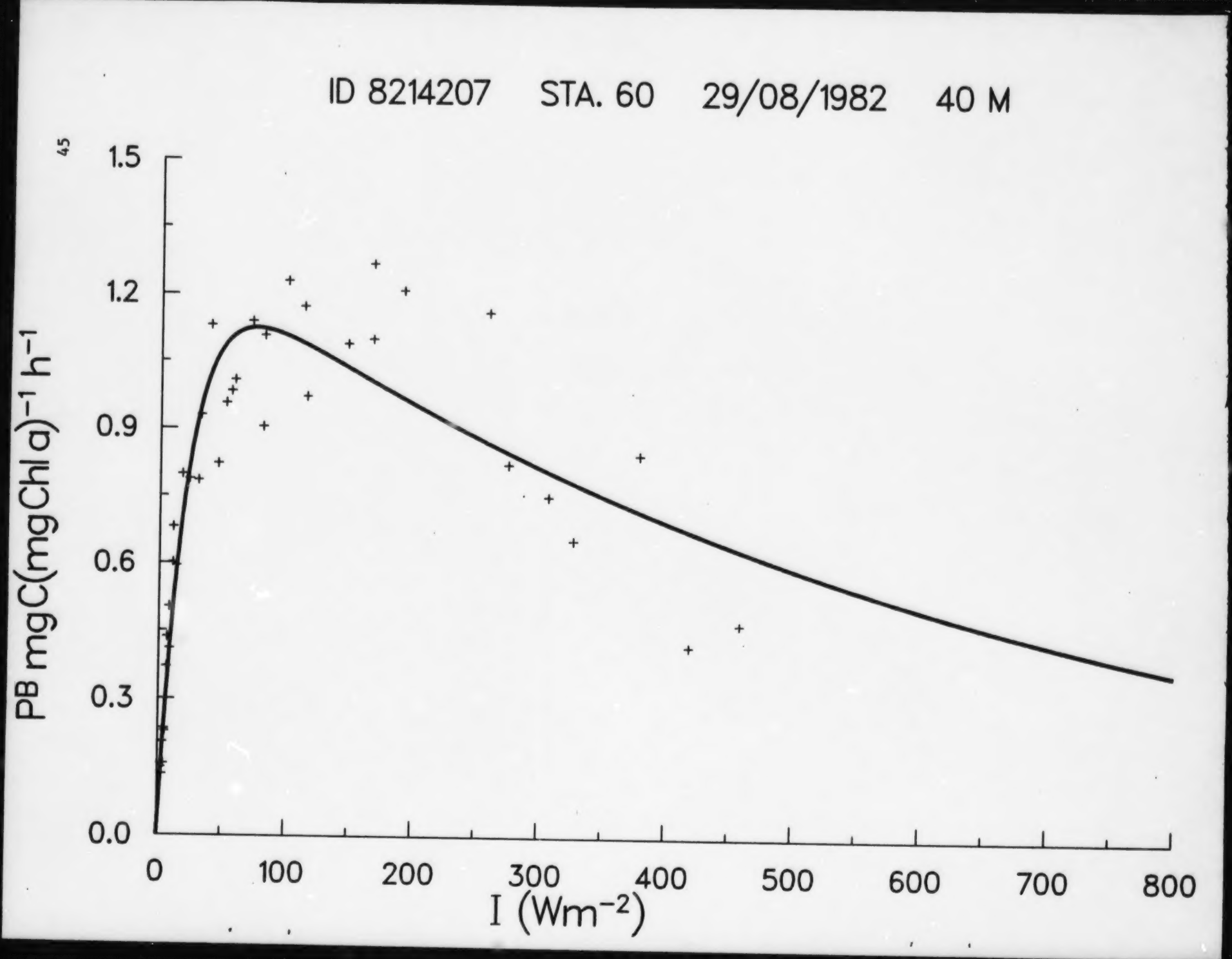

ID 8214015 STA. 52 26/08/1982 10 M
40
3.0
2.4
1.8
1.2
0.6
0.0
PB mgC(mgChl a)$^{-1}$ h^{-1}
0
100
200
300
400
500
600
700
800
I (Wm^{-2})

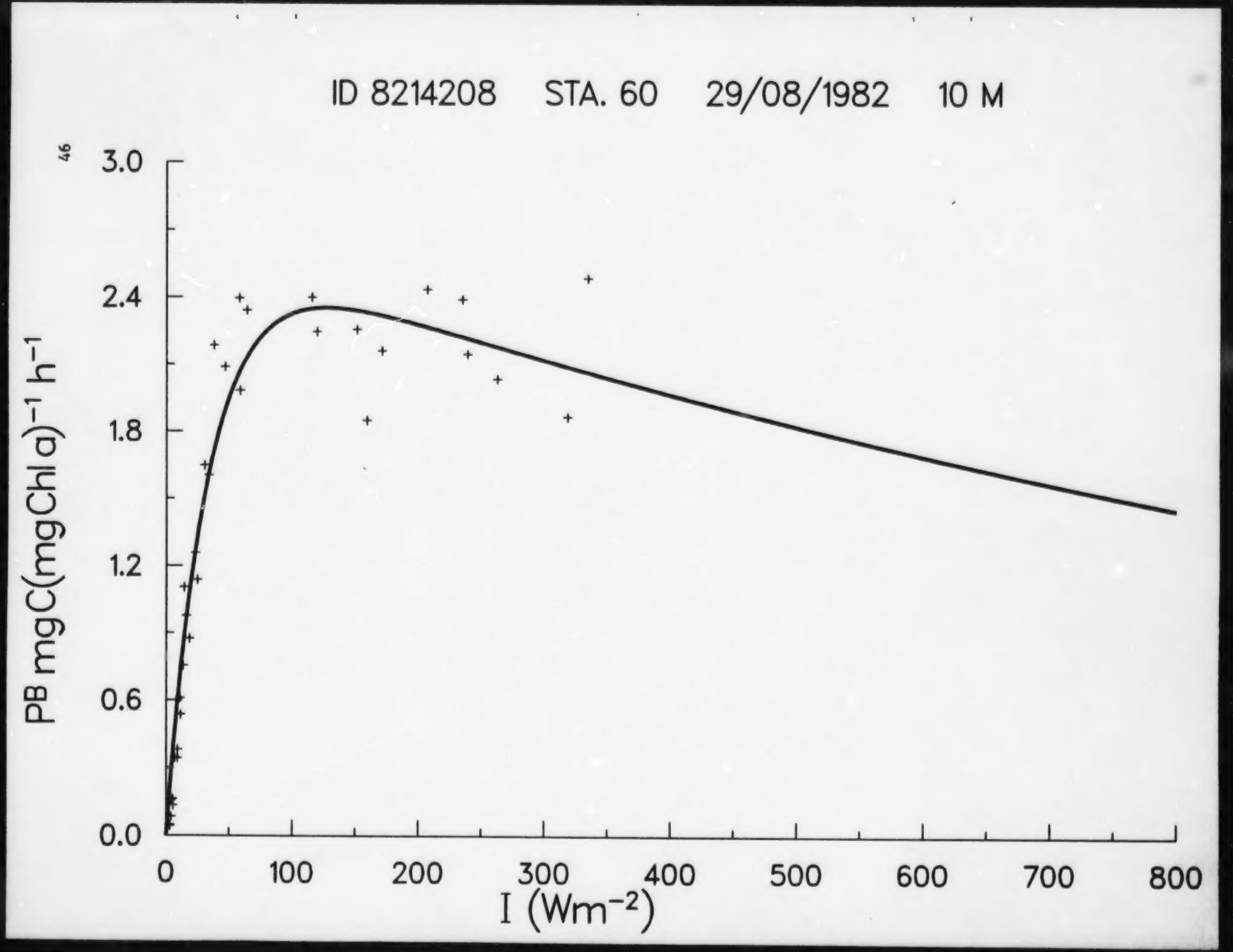

ID 8214084 STA. 56 27/08/1982 30 M
PB mgC(mgChl a)$^{-1}$ h^{-1}
2.5
2.0
1.5
1.0
0.5
0.0
0
100
200
300
400
500
600
700
800
I (Wm^{-2})

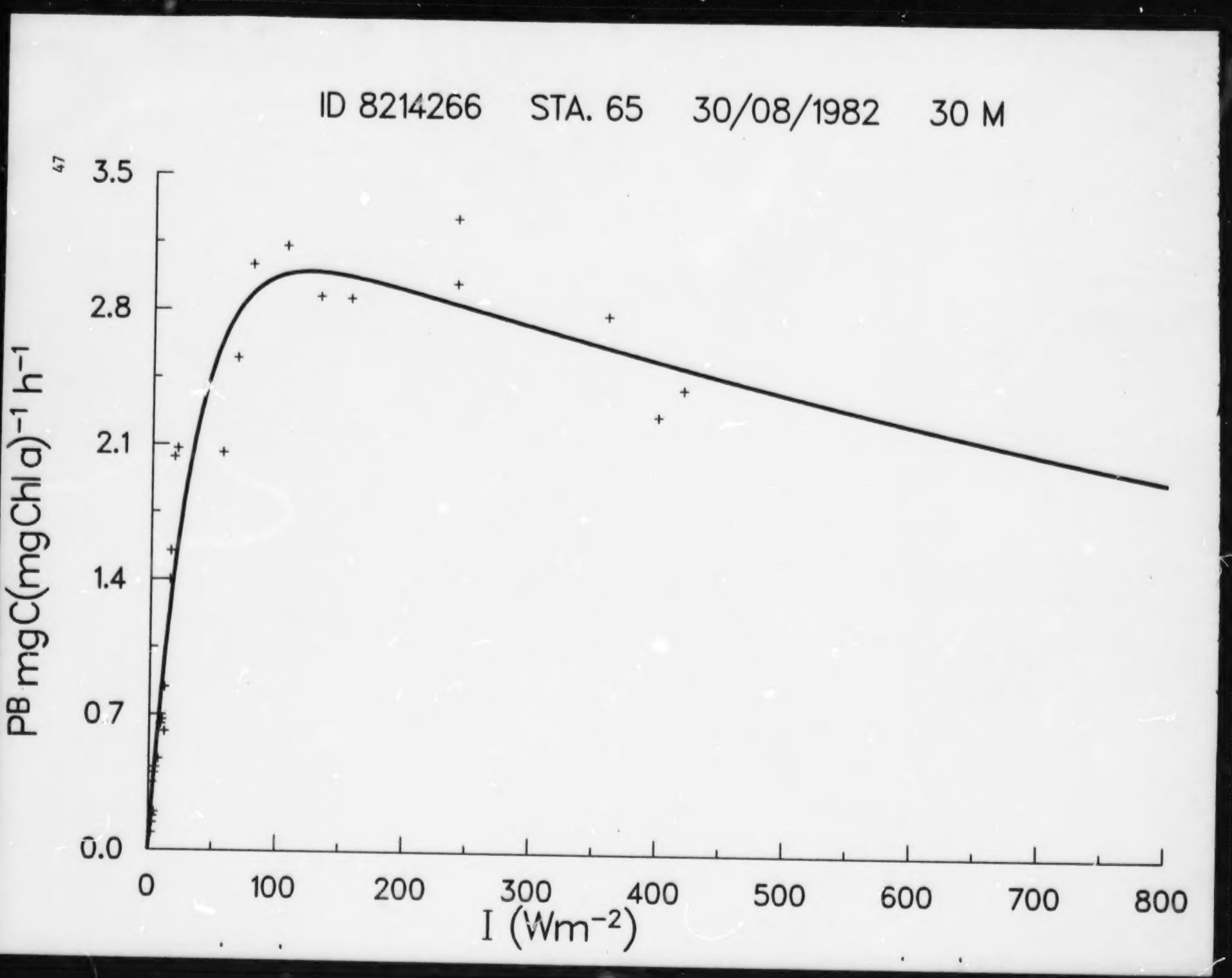

ID 8214085 STA. 56 27/08/1982 10 M
^{42}
5.5
4.4
3.3
2.2
1.1
0.0
P^B mgC(mgChl a)$^{-1}$ h^{-1}
0
100
200
300
400
500
600
700
800
I (Wm^{-2})

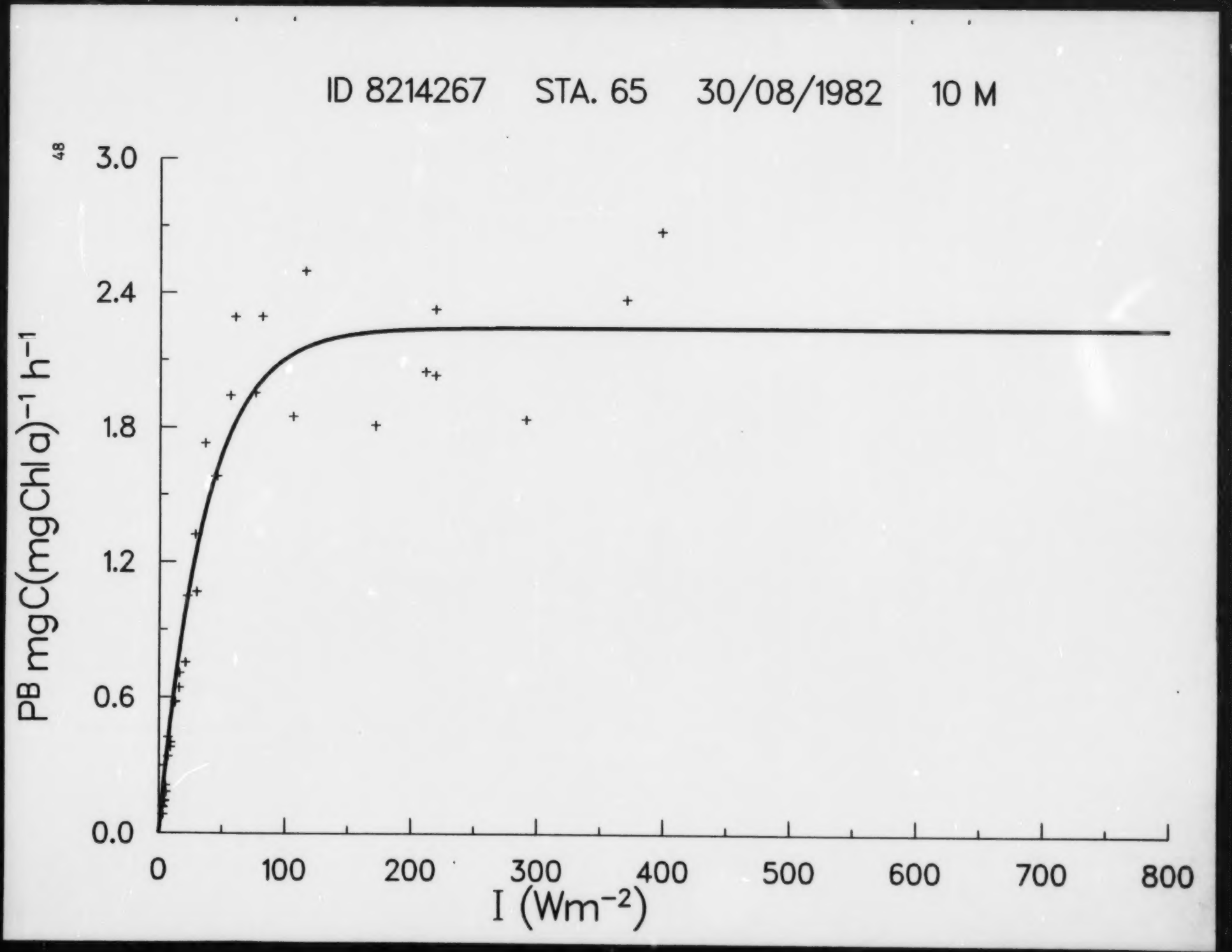

ID 8214160 STA. 58 28/08/1982 40 M
43
PB mgC(mgChl a)$^{-1}$ h^{-1}
2.5
2.0
1.5
1.0
0.5
0.0
0
100
200
300
400
500
600
700
800
I (Wm^{-2})

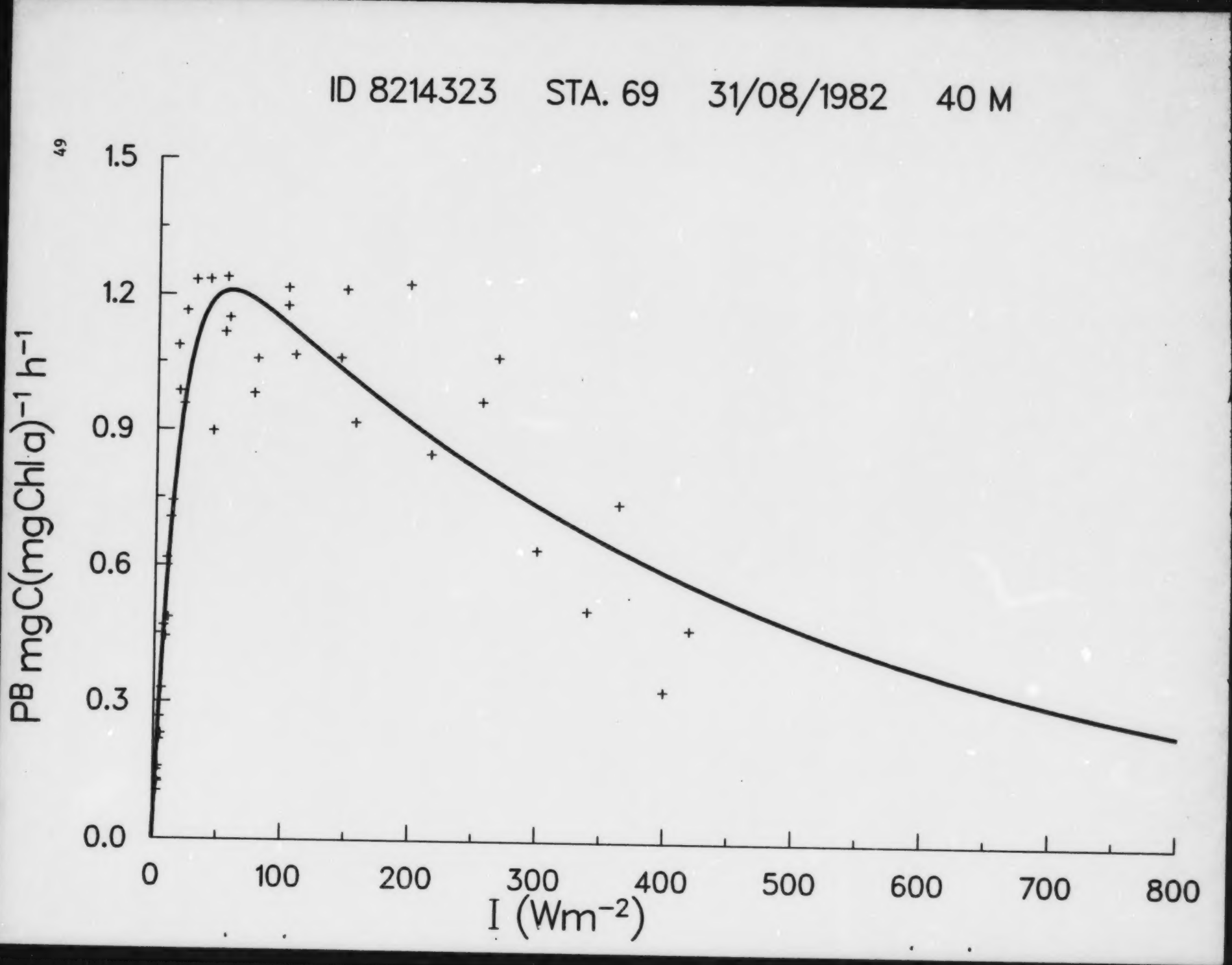

ID 8214161 STA. 58 28/08/1982 10 M
PB mgC(mgChl a)$^{-1}$ h^{-1}
6.0
4.8
3.6
2.4
1.2
0.0
0
100
200
300
400
500
600
700
800
I (Wm^{-2})

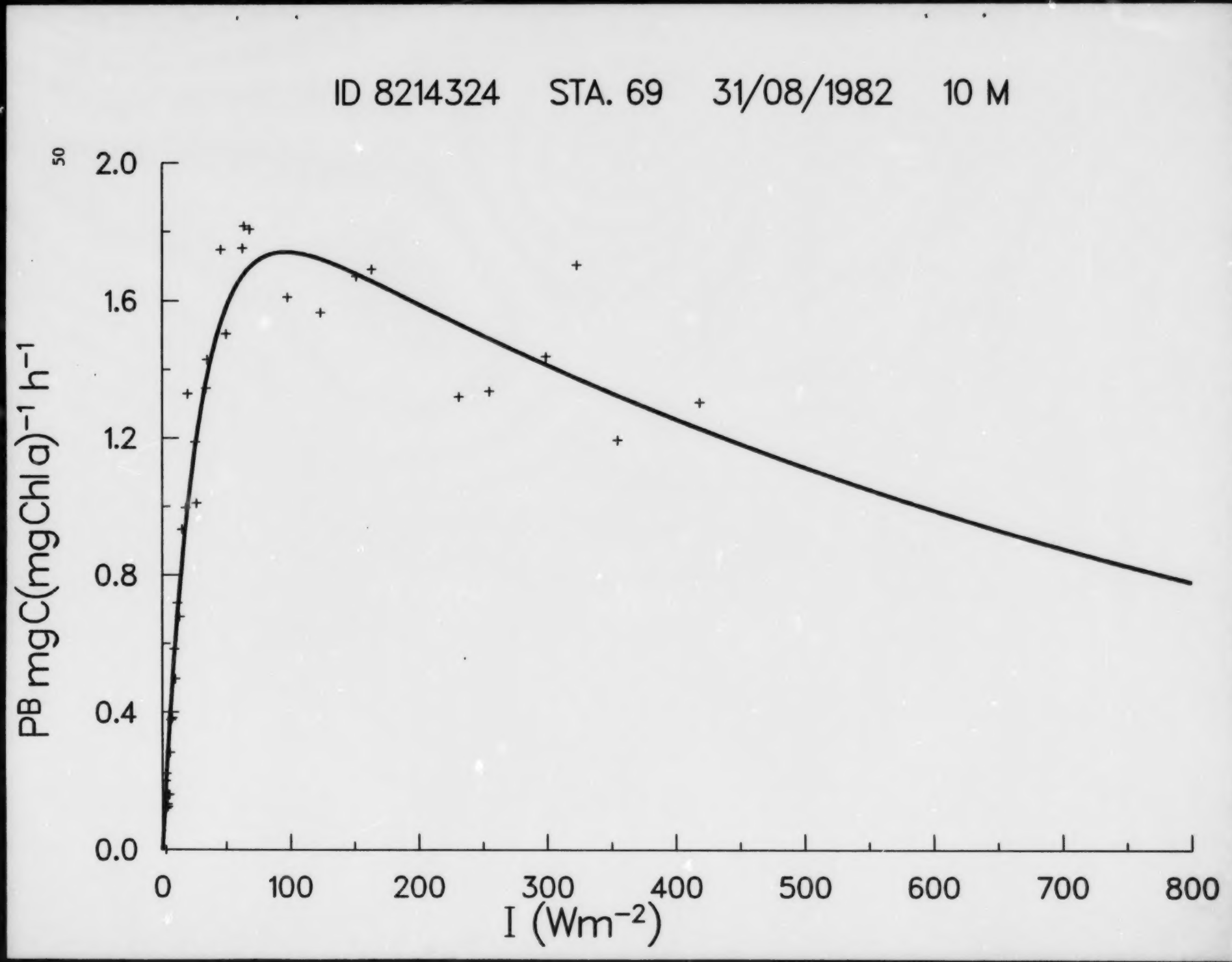

ID 8214207 STA. 60 29/08/1982 40 M
45
1.5
1.2
0.9
0.6
0.3
0.0
PB mgC(mgChl a)$^{-1}$ h^{-1}
0
100
200
300
400
500
600
700
800
I (Wm^{-2})

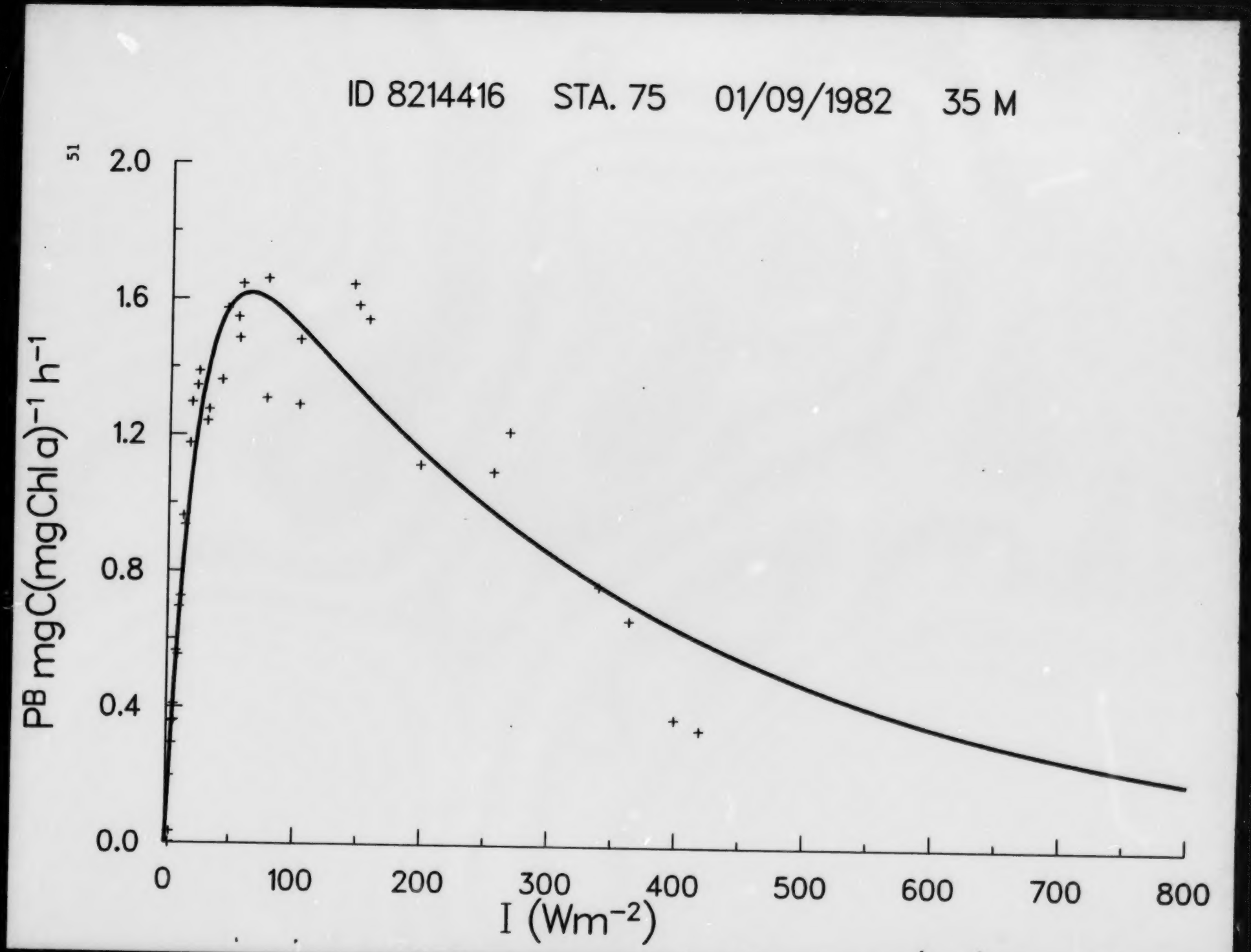

ID 8214208 STA. 60 29/08/1982 10 M
PB mgC(mgChl a)$^{-1}$ h^{-1}
3.0
2.4
1.8
1.2
0.6
0.0
0
100
200
300
400
500
600
700
800
I (Wm^{-2})

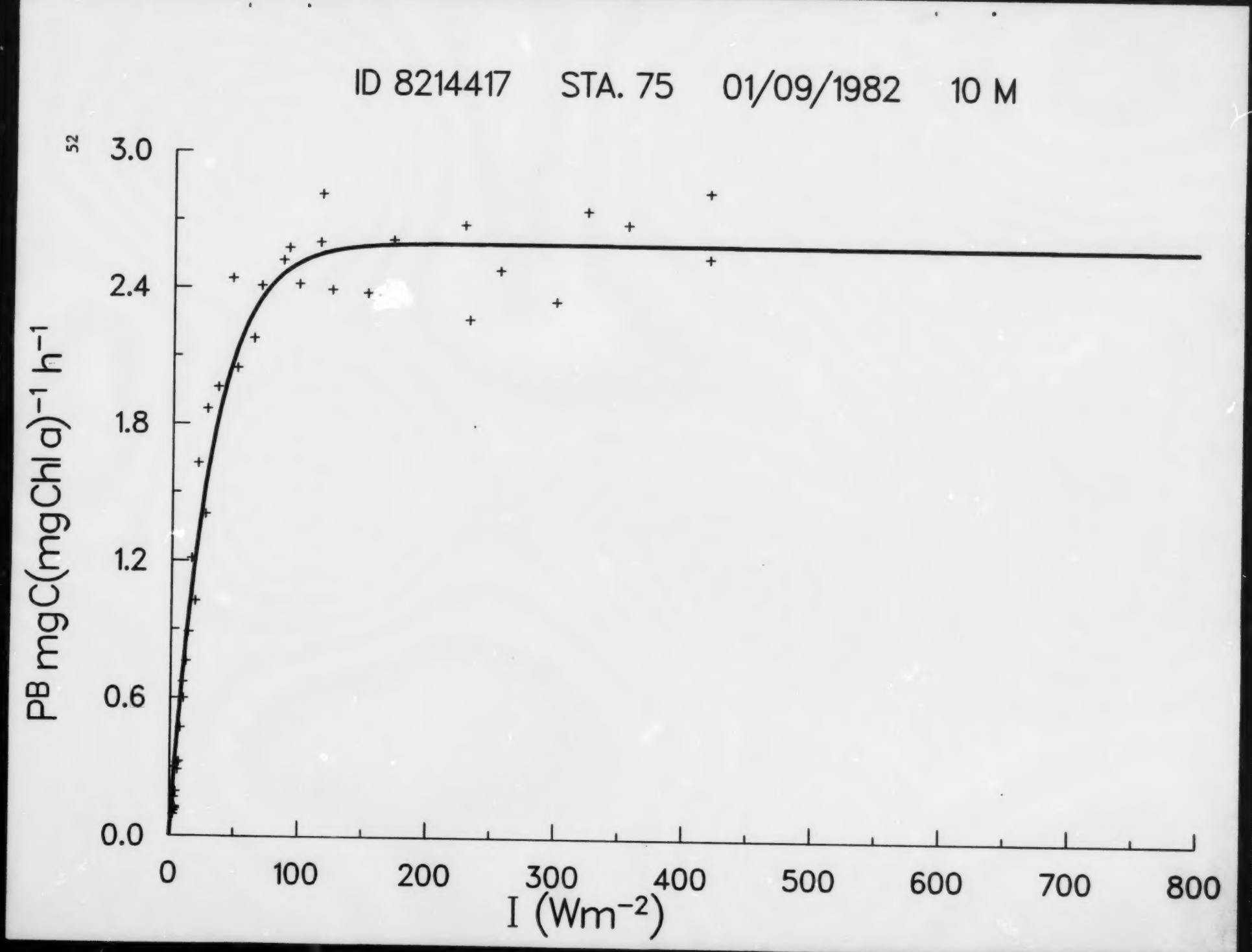

ID 8214266 STA. 65 30/08/1982 30 M
3.5
2.8
2.1
1.4
0.7
0.0
PB mgC(mgChl a)⁻¹ h⁻¹
0
100
200
300
400
500
600
700
800
I (Wm⁻²)

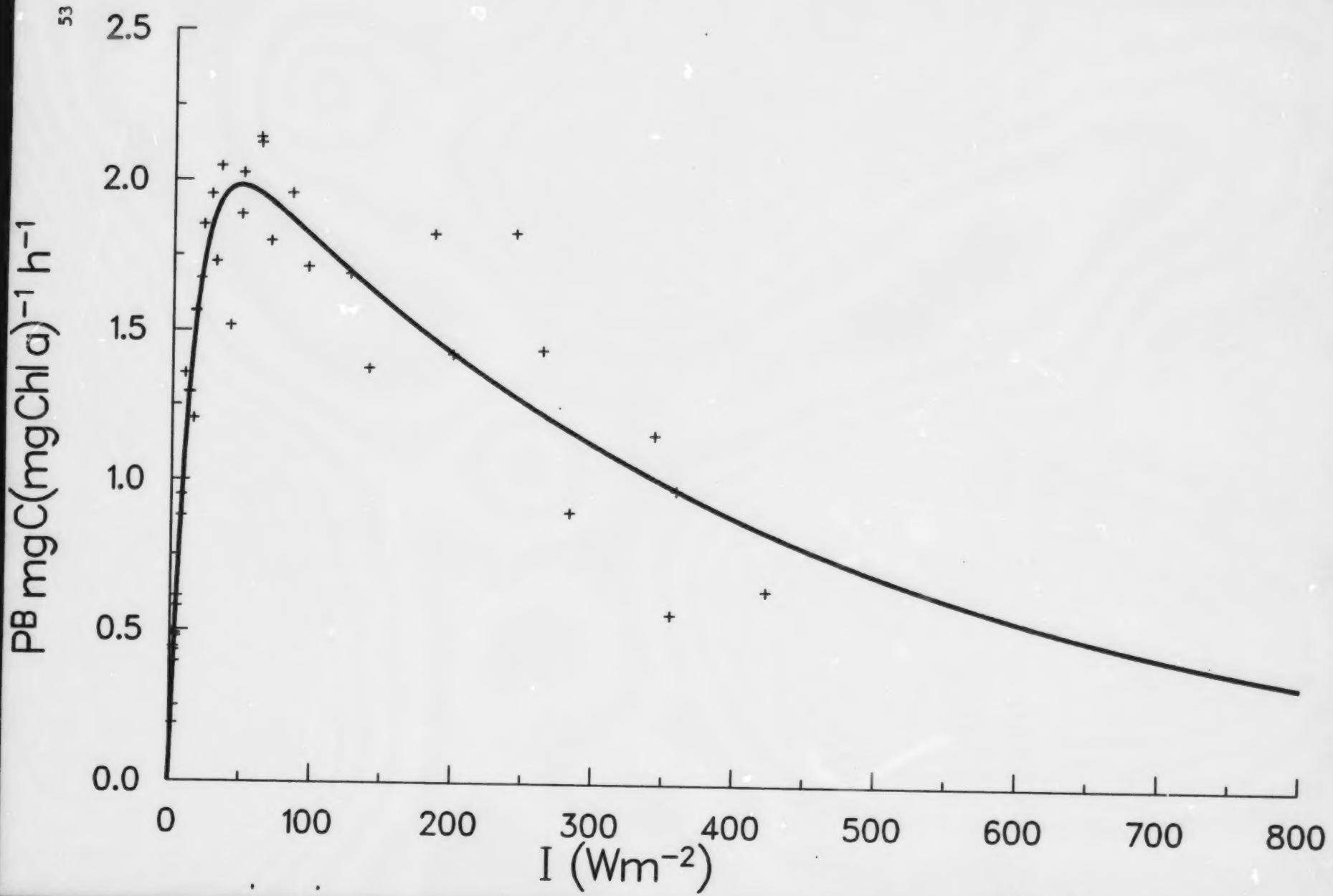

ID 8214267 STA. 65 30/08/1982 10 M
PB mgC(mgChl a)$^{-1}$ h^{-1}
3.0
2.4
1.8
1.2
0.6
0.0
0
100
200
300
400
500
600
700
800
I (Wm^{-2})

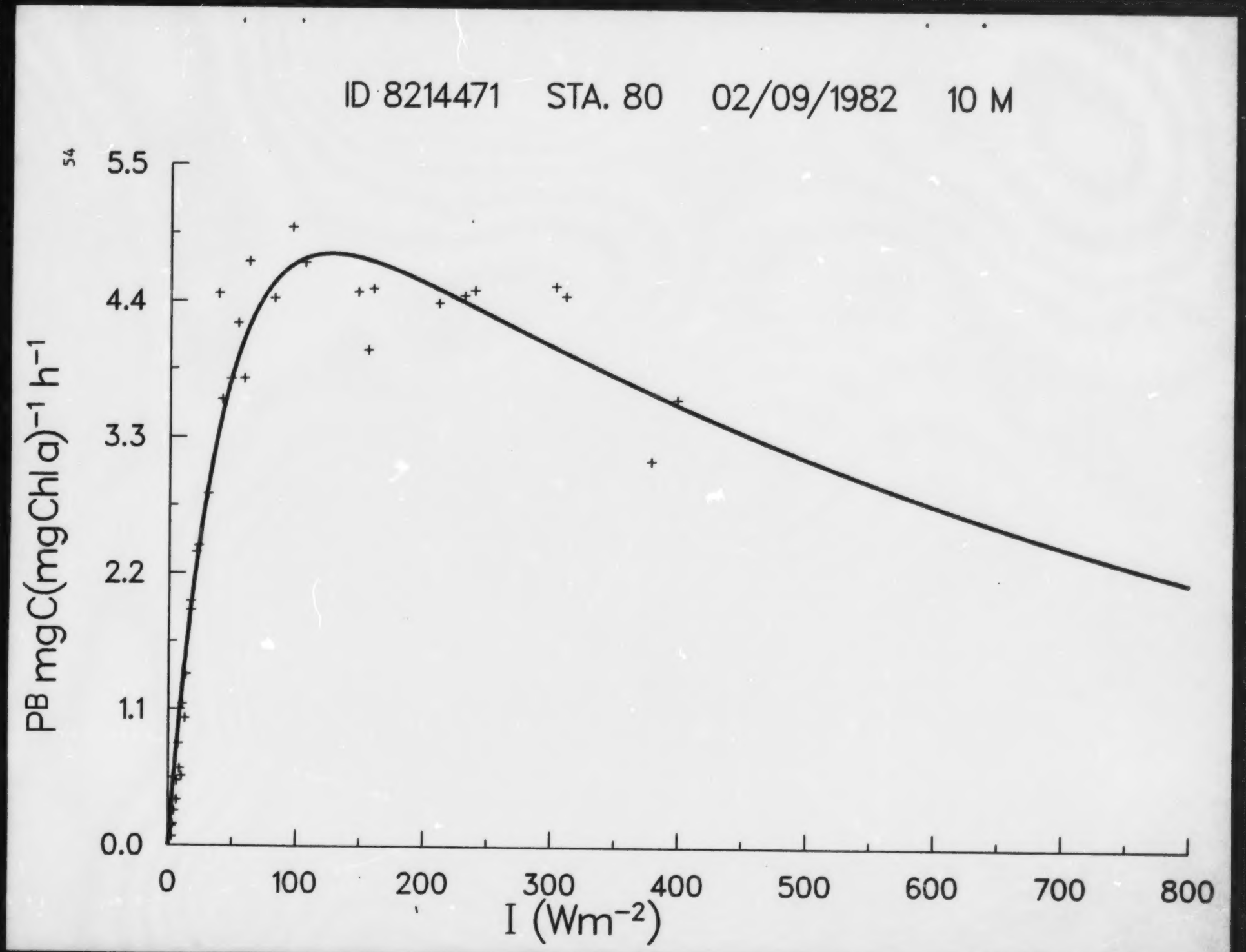

ID 8214323 STA. 69 31/08/1982 40 M
PB mgC(mgChl a)$^{-1}$ h^{-1}
1.5
1.2
0.9
0.6
0.3
0.0
0
100
200
300
400
500
600
700
800
I (Wm^{-2})

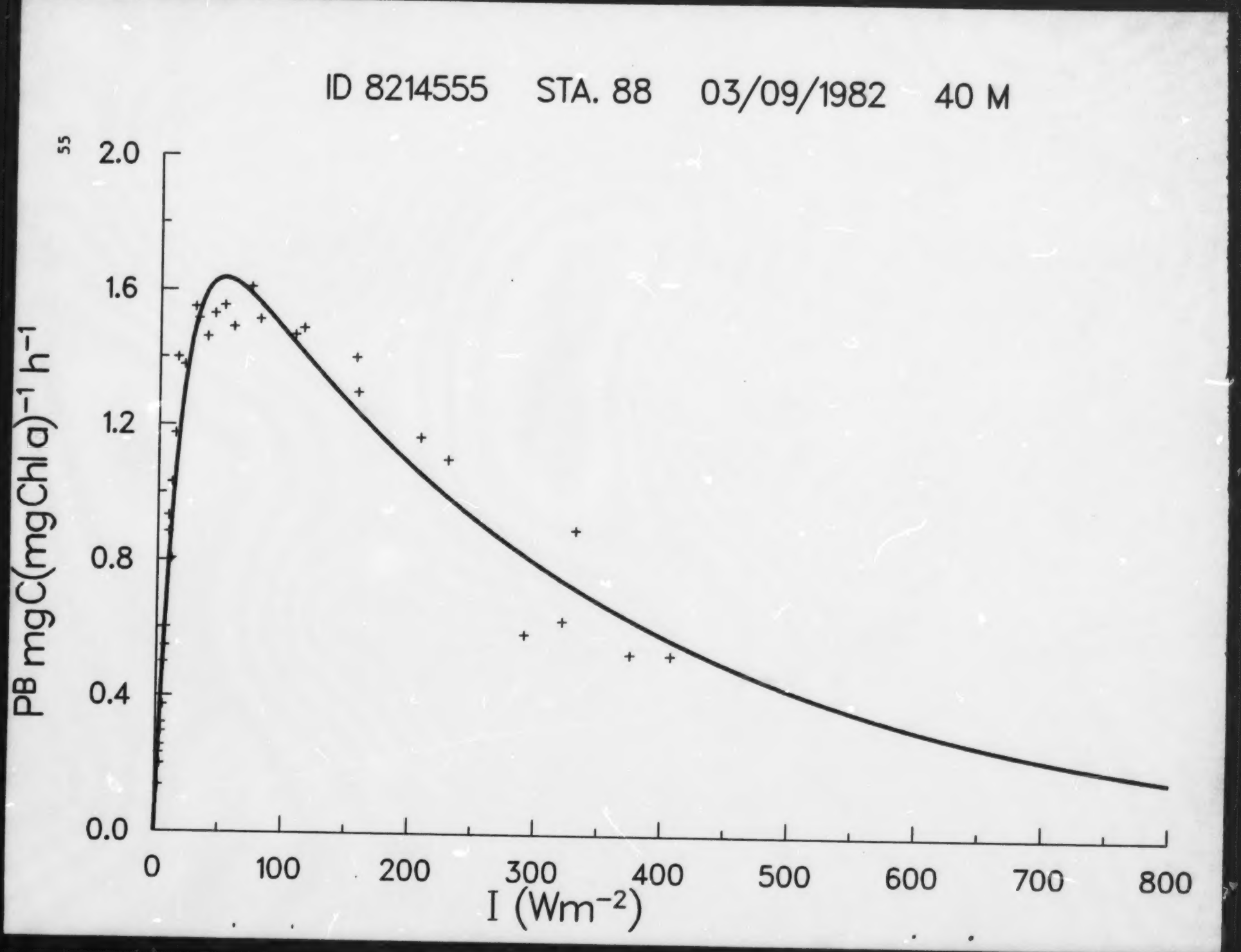

ID 8214324 STA. 69 31/08/1982 10 M
P^{50}_B mgC(mgChl a)$^{-1}$ h^{-1}
2.0
1.6
1.2
0.8
0.4
0.0
0
100
200
300
400
500
600
700
800
I (Wm^{-2})

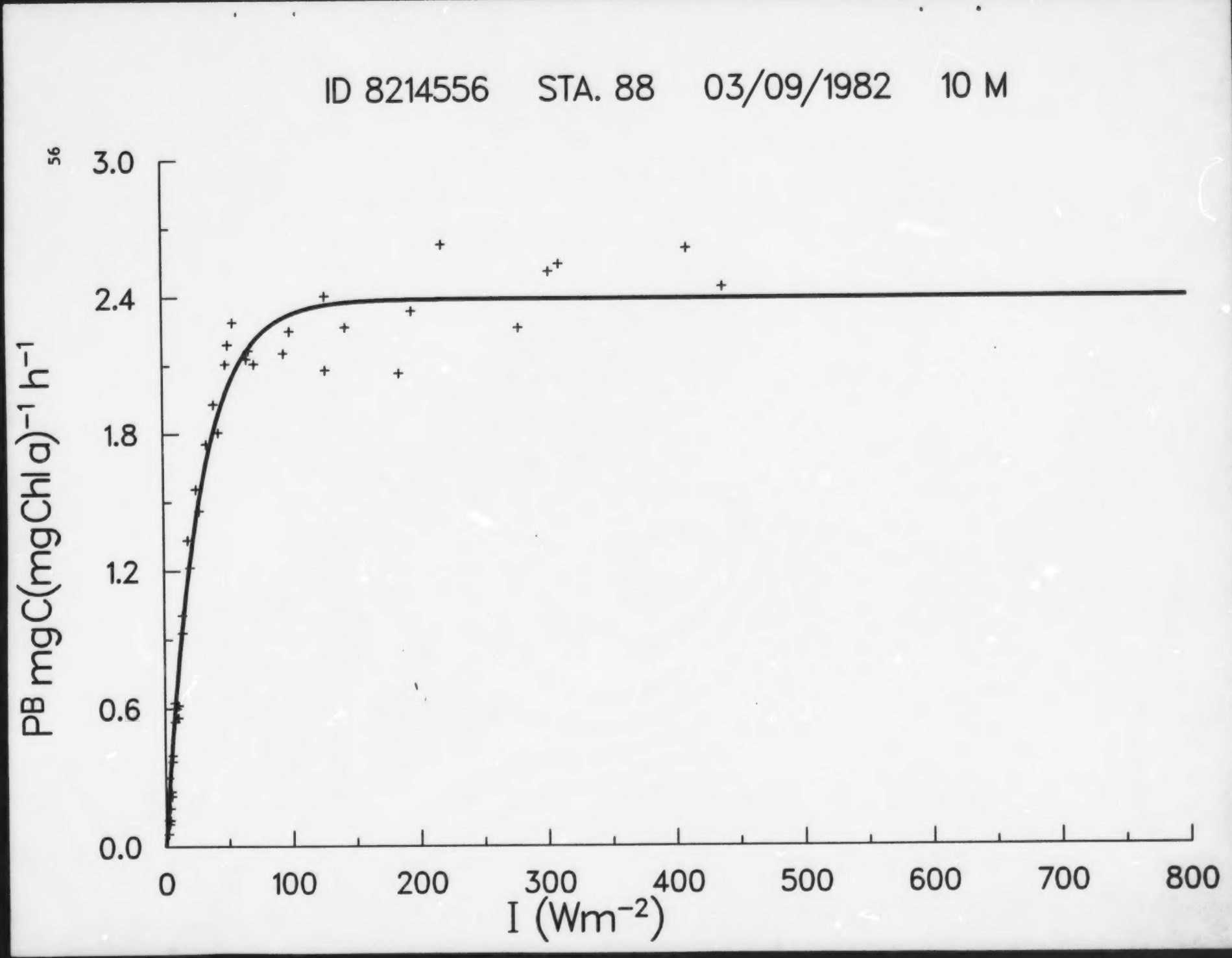

ID 8214416 STA. 75 01/09/1982 35 M
PB mgC(mgChl a)$^{-1}$ h^{-1}
2.0
1.6
1.2
0.8
0.4
0.0
0
100
200
300
400
500
600
700
800
I (Wm^{-2})


ID 8214417 STA. 75 01/09/1982 10 M
PB mgC(mgChl a)$^{-1}$ h^{-1}
3.0
2.4
1.8
1.2
0.6
0.0
0
100
200
300
400
500
600
700
800
I (Wm^{-2})

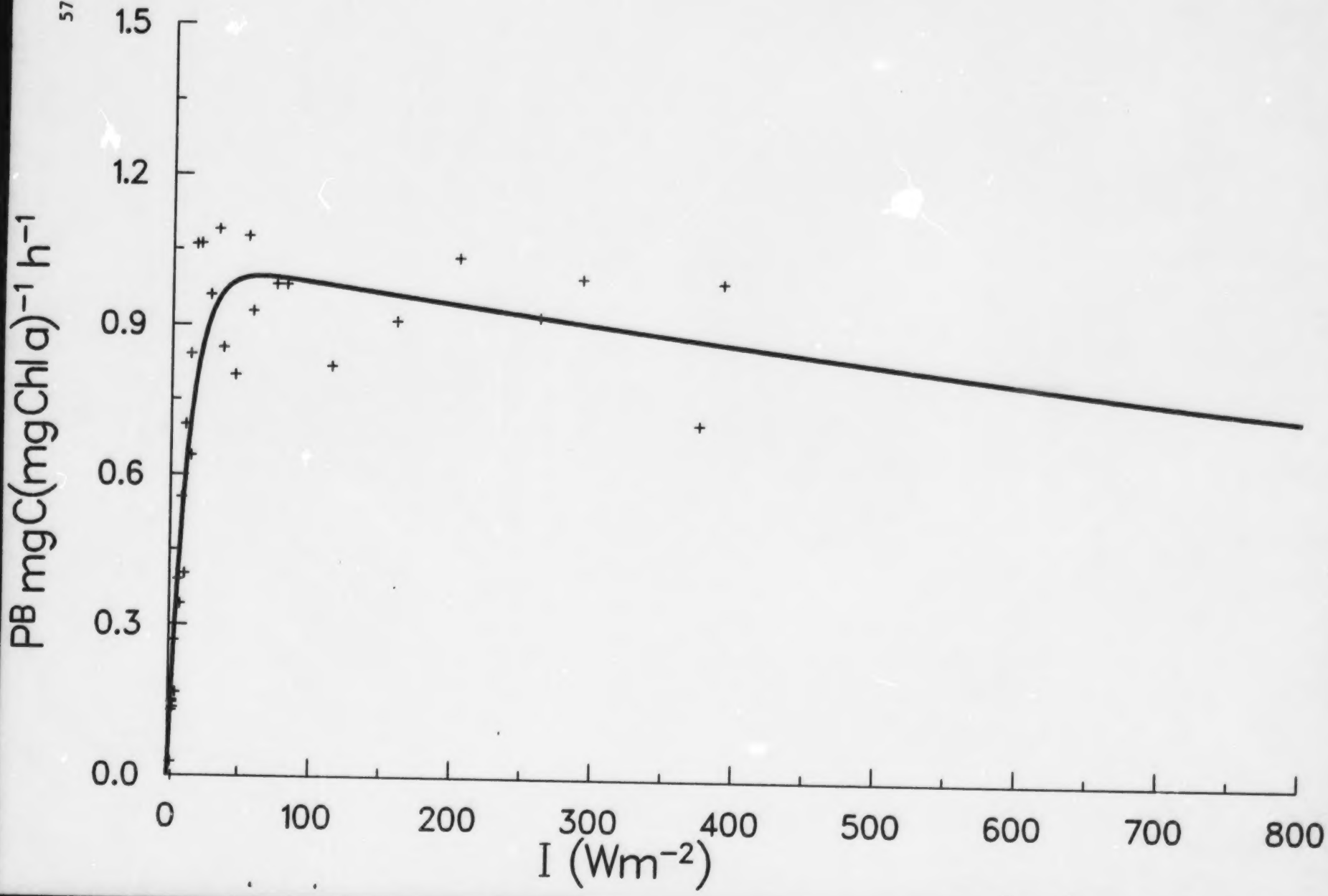

ID 8214470 STA. 80 02/09/1982 60 M
PB mgC(mgChl a)$^{-1}$ h^{-1}
2.5
2.0
1.5
1.0
0.5
0.0
0
100
200
300
400
500
600
700
800
I (Wm^{-2})

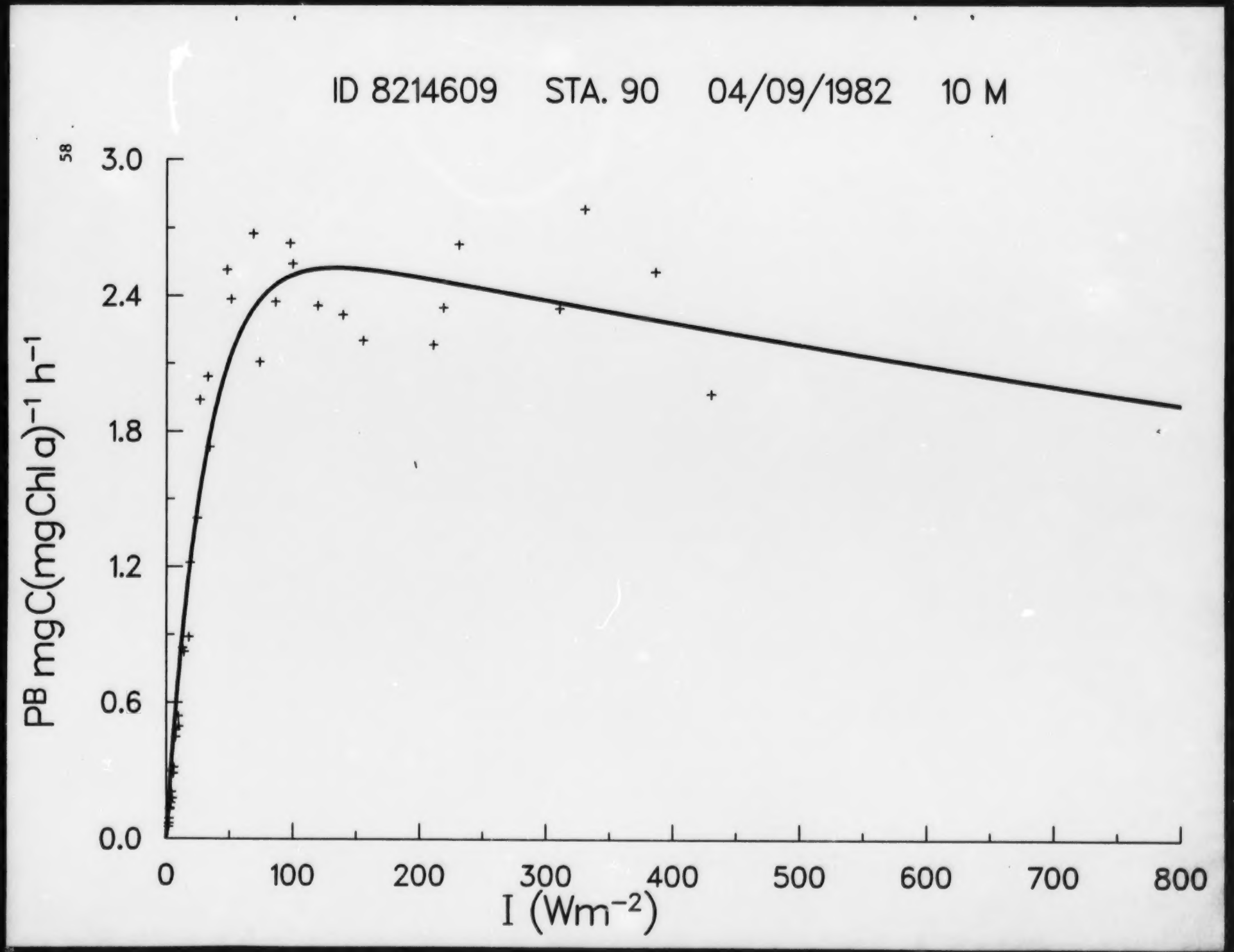

ID 8214471 STA. 80 02/09/1982 10 M
PB mgC(mgChl a)$^{-1}$ h^{-1}
5.5
4.4
3.3
2.2
1.1
0.0
0
100
200
300
400
500
600
700
800
I (Wm^{-2})

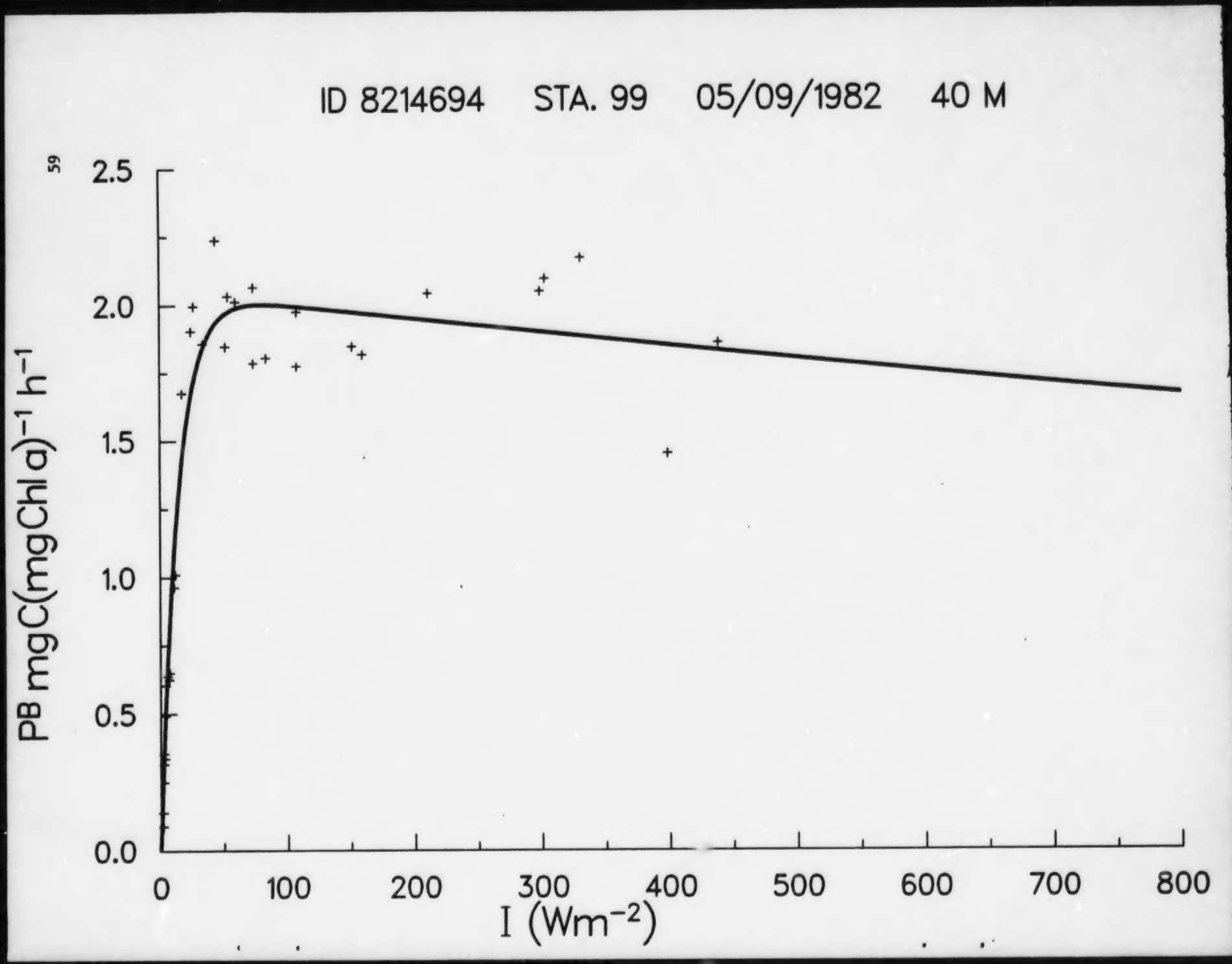

ID 8214555 STA. 88 03/09/1982 40 M
PB mgC(mgChl a)$^{-1}$ h^{-1}
2.0
1.6
1.2
0.8
0.4
0.0
0
100
200
300
400
500
600
700
800
I (Wm^{-2})

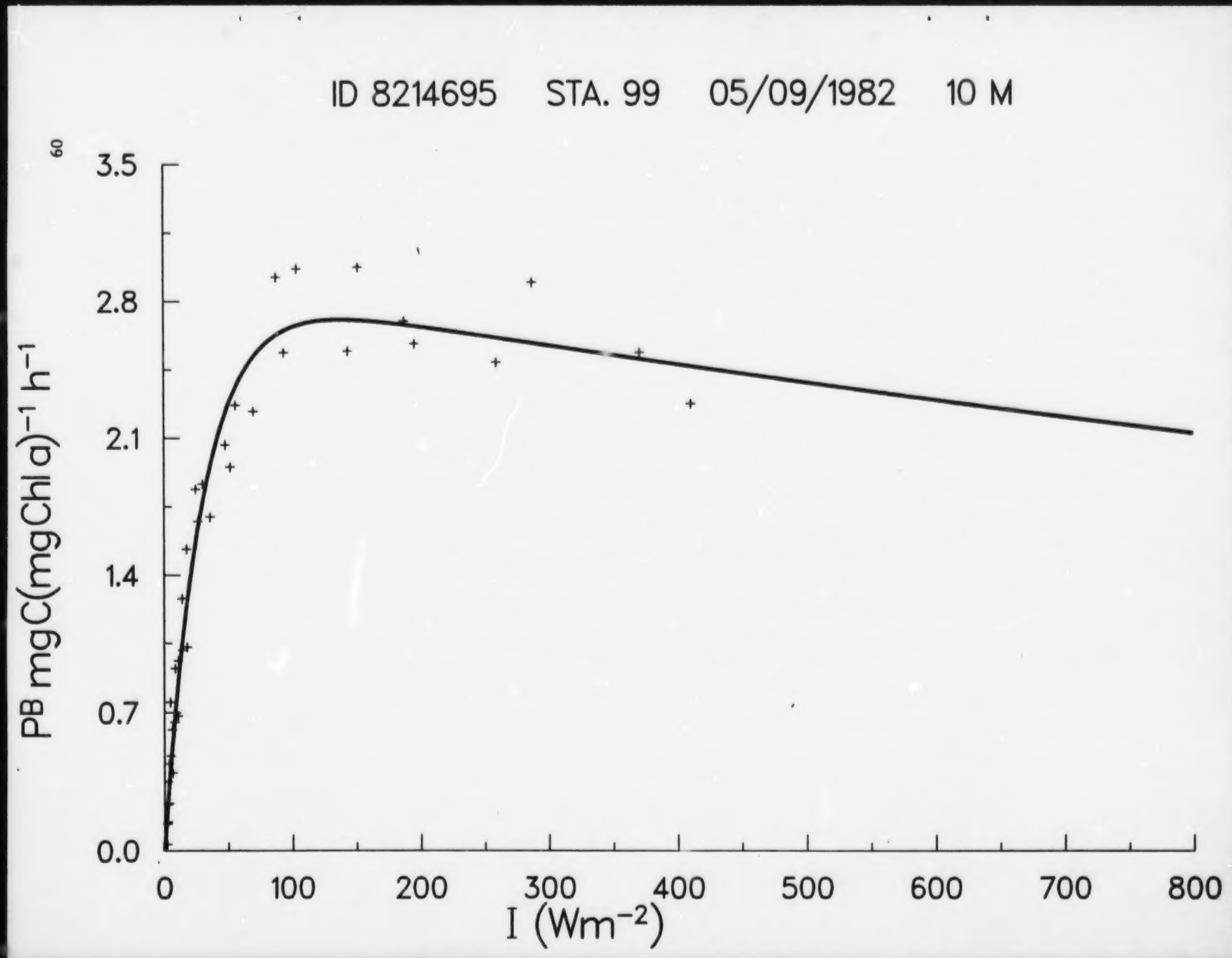

ID 8214556 STA. 88 03/09/1982 10 M
56
3.0
2.4
1.8
1.2
0.6
0.0
PB mgC(mgChl a)$^{-1}$ h^{-1}
0
100
200
300
400
500
600
700
800
I (Wm^{-2})

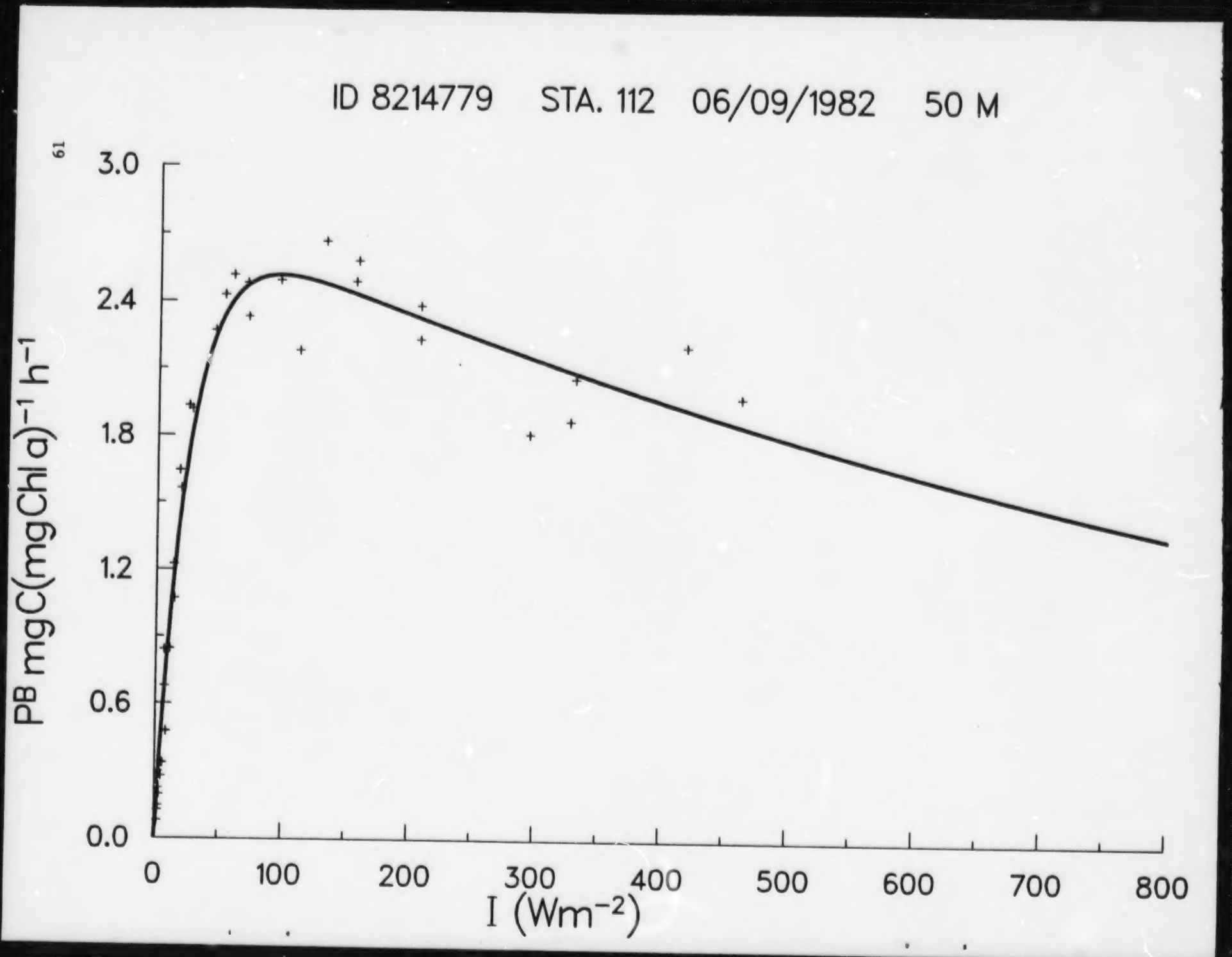
ID 8214608 STA. 90 04/09/1982 60 M

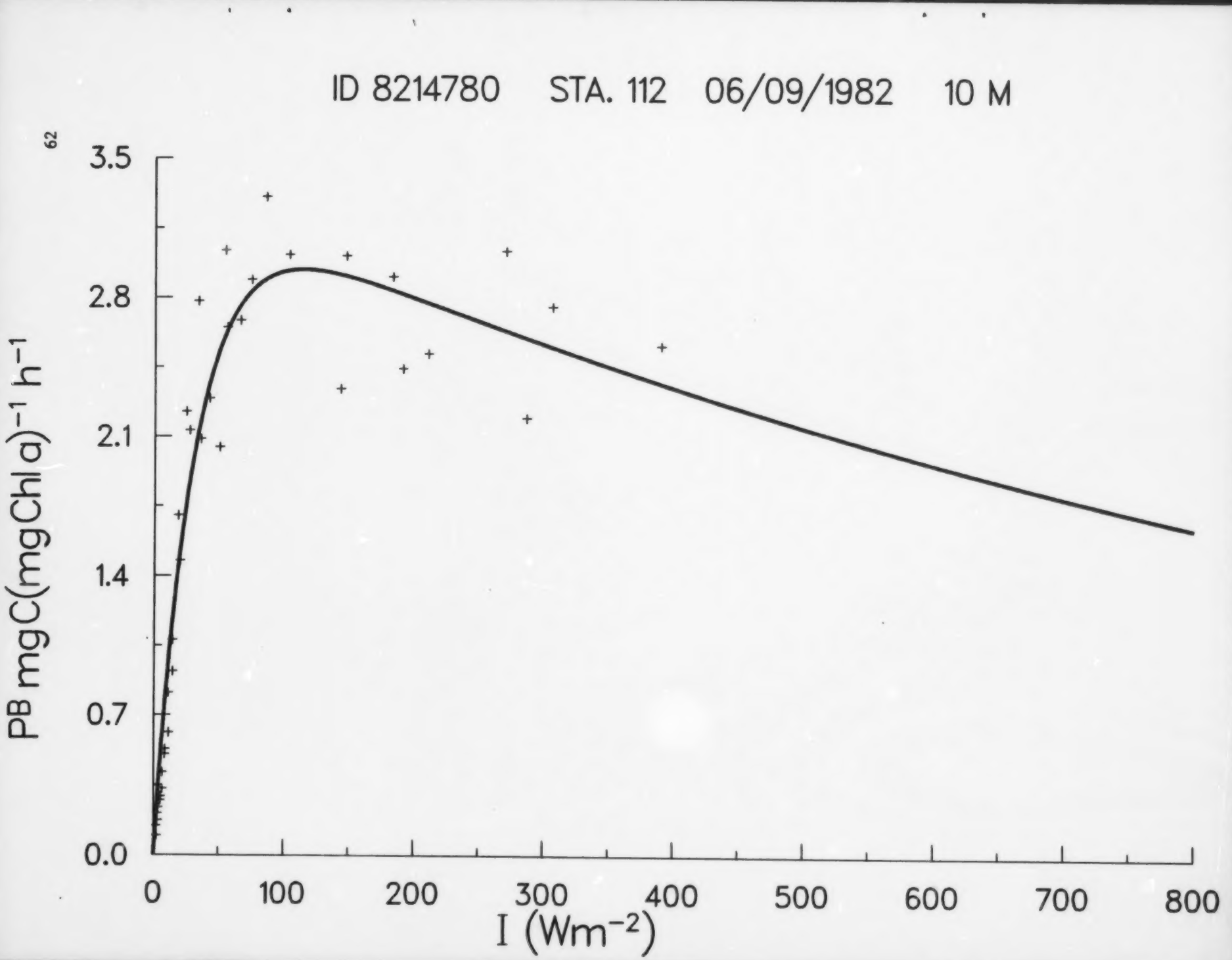



ID 8214609 STA. 90 04/09/1982 10 M
PB mgC(mgChl a)$^{-1}$ h^{-1}
3.0
2.4
1.8
1.2
0.6
0.0
0
100
200
300
400
500
600
700
800
I (Wm^{-2})


ID 8214694 STA. 99 05/09/1982 40 M
59
PB mgC(mgChl a)$^{-1}$ h^{-1}
2.5
2.0
1.5
1.0
0.5
0.0
0
100
200
300
400
500
600
700
800
I (Wm^{-2})


ID 8214695 STA. 99 05/09/1982 10 M
60
3.5
2.8
2.1
1.4
0.7
0.0
PB mgC(mgChl a)$^{-1}$ h^{-1}
0
100
200
300
400
500
600
700
800
I (Wm^{-2})


ID 8214779 STA. 112 06/09/1982 50 M
PB mgC(mgChl a)$^{-1}$ h^{-1}
3.0
2.4
1.8
1.2
0.6
0.0
0
100
200
300
400
500
600
700
800
I (Wm^{-2})


ID 8214780 STA. 112 06/09/1982 10 M
PB mgC(mgChl a)$^{-1}$ h^{-1}
3.5
2.8
2.1
1.4
0.7
0.0
0
100
200
300
400
500
600
700
800
I (Wm^{-2})

PI DATA

UNITS

P = mg C m^{-3} h^{-1} (mg Chl)-1

I = W m^{-2}

P_s = mg C mg Chl^{-1} h^{-1}

α = mg C $(mg\ Chl)^{-1}$ h^{-1} w^{-1} m^{-2}

β = mg C $(mg\ Chl)^{-1}$ h^{-1} w^{-1} m^{-2}

Organic particulates are in mg m^{-3} and inorganic nutrients in mg at m^{-3}. The 90% confidence interval for P_s, α and β are shown in the closed brackets below the estimates for each parameter.

LABRADOR SHELF AND HUDSON BAY 1982

LAT 46°56.10' N LONG 59°33.40' W DATE 13/08/1982 DEPTH 28.3 M

I	P	I	P	I	P	I	P
439	.44	379	1.16	379	.57	283	1.14
271	.90	211	1.58	159	1.48	155	1.76
140	2.21	104	1.91	102	2.15	90	2.23
78	1.78	76	2.04	64	2.22	54	1.95
50	2.46	49	2.33	40	2.27	37	2.22
36	2.32	30	2.02	22	2.19	20	1.77
16	1.59	15	1.89	12	1.45	12	1.67
9	1.11	9	1.23	7	.82	7	.82
5	.59	5	.69	4	.36	4	.37
3	.20	3	.32	3	.14	2	.06
2	.12	2	.16				

PARAMETER VALUES

PS : 2.88 (2.73, 3.04)

ALPHA : .163 (.152, .174)

BETA : .0099 (.0083, .0115)

SAMPLE TEMP 13.9°C

INCUBATION TEMP 13.0°C

CHLOROPHYLL : 1.07

AMMONIA : 2.28

NITRATE : .00

SILICATE : 1.51

PHOSPHATE : .40

LABRADOR SHELF AND HUDSON BAY 1982

LAT 46°56.10' N LONG 59°33.40' W DATE 13/08/1982 DEPTH 10 M

I	P	I	P	I	P	I	P
458	.97	419	1.12	319	.98	311	1.27
255	1.20	215	1.22	191	1.11	151	1.55
128	1.03	112	1.48	106	1.38	86	1.54
78	1.33	76	1.29	58	1.58	56	1.57
42	1.26	42	1.39	42	1.71	32	1.81
30	1.68	25	1.71	22	1.42	19	1.72
16	1.52	14	1.09	12	1.08	11	.92
9	.91	7	.45	6	.34	5	.50
4	.20	4	.18	3	.13	3	.04
2	.08	2	.01	2	.00		

PARAMETER VALUES

PS : 1.70 (1.60, 1.81)

ALPHA : .130 (.114, .145)

BETA : .0024 (.0016, .0031)

SAMPLE TEMP 16.6°C

INCUBATION TEMP 13.0°C

CHLOROPHYLL : .78

AMMONIA : 1.14

NITRATE : .00

SILICATE : 1.52

PHOSPHATE : .10

LABRADOR SHELF AND HUDSON BAY 1982

LAT 53°53.00' N LONG 54°50.80' W DATE 16/08/1982 DEPTH 17 M

I	P	I	P	I	P	I	P
478	3.76	399	3.64	399	3.28	327	4.07
235	3.31	215	4.04	199	4.26	171	4.34
140	3.77	128	4.28	120	3.99	88	4.34
88	4.57	84	3.97	70	4.68	63	4.60
62	4.18	60	4.17	46	4.21	42	4.09
36	3.83	36	3.85	26	2.98	26	2.37
19	2.64	19	1.96	15	1.78	12	1.50
11	1.33	11	1.02	8	1.11	8	.63
6	.93	6	1.33	5	.77	5	.56
4	.54	4	.28	3	.22	3	.56
2	.05	2	.00	2	.15		

PARAMETER VALUES

PS : 4.92 (4.68, 5.16)

ALPHA : .172 (.161, .183)

BETA : .0041 (.0029, .0053)

SAMPLE TEMP 6.0°C

INCUBATION TEMP 9.0°C

CHLOROPHYLL : .18

AMMONIA : .68

NITRATE : .00

SILICATE : .35

PHOSPHATE : .13

LABRADOR SHELF AND HUDSON BAY 1982

LAT 53°53.00' N LONG 54°50.80' W DATE 16/08/1982 DEPTH 10 M

I	P	I	P	I	P	I	P
458	2.20	399	2.50	359	2.72	319	2.19
309	3.13	211	3.03	199	2.79	169	2.95
144	2.78	136	2.97	120	3.12	104	2.63
92	2.69	90	3.12	72	2.64	65	2.89
64	2.60	54	2.75	47	3.01	44	2.74
41	2.83	35	1.92	31	2.56	23	2.64
21	1.75	17	1.16	14	1.31	13	1.33
12	.97	10	.89	9	.64	8	1.03
7	.68	6	.27	6	.32	4	.27
2	.01	2	.02				

PARAMETER VALUES

PS : 3.27
(3.08, 3.46)

ALPHA : .122
(.112, .132)

BETA : .0023
(.0014, .0032)

SAMPLE TEMP 9.0°C

INCUBATION TEMP 9.0°C

CHLOROPHYLL : .23

AMMONIA : .69

NITRATE : .00

SILICATE : .24

PHOSPHATE : .00

LABRADOR SHELF AND HUDSON BAY 1982

LAT 54°45.00' N LONG 55°52.00' W DATE 16/08/1982 DEPTH 17 M

I	P	I	P	I	P	I	P
419	7.52	399	7.80	319	7.65	299	6.71
263	7.33	239	7.51	191	7.79	163	7.54
136	6.77	128	7.50	112	7.31	96	6.30
92	6.81	78	7.41	72	7.81	68	6.76
68	6.21	53	6.71	50	5.91	48	6.48
42	6.34	36	4.23	29	4.48	26	3.90
22	4.14	17	2.69	13	1.87	12	2.20
11	1.44	9	1.30	8	1.20	7	1.32
6	.77	5	1.24	5	.74	4	.42
4	.39	3	.49	3	.32	2	.48

PARAMETER VALUES

PS : 7.75
(7.37, 8.13)

ALPHA : .225
(.211, .238)

BETA : .0009
(-.0006, .0024)

SAMPLE TEMP 8.0°C

INCUBATION TEMP 8.5°C

CHLOROPHYLL : .14

AMMONIA : .80

NITRATE : .00

SILICATE : .47

PHOSPHATE : .13

LABRADOR SHELF AND HUDSON BAY 1982

LAT 54°45.00' N LONG 55°52.00' W DATE 16/08/1982 DEPTH 10 M

I	P	I	P	I	P	I	P
478	7.10	439	7.12	339	6.97	311	7.58
291	7.50	231	7.98	199	6.78	183	7.95
144	7.75	136	7.94	128	7.89	104	7.46
96	7.78	92	8.07	80	8.23	68	7.63
64	7.36	56	6.59	46	7.27	42	6.22
34	5.56	31	5.29	18	3.46	18	2.61
13	2.71	13	1.98	10	1.55	10	1.68
8	1.15	7	1.13	6	.43	6	.95
5	.37	5	.43	4	.00	3	.00
3	.05	3	.38	2	.00		

PARAMETER VALUES

PS : 9.04
(8.58, 9.51)

ALPHA : .235
(.221, .249)

BETA : .0056
(.0036, .0076)

SAMPLE TEMP 8.0°C

INCUBATION TEMP 8.5°C

CHLOROPHYLL : .13

AMMONIA : 1.23

NITRATE : .00

SILICATE : .32

PHOSPHATE : .00

LABRADOR SHELF AND HUDSON BAY 1982

LAT 55°23.90' N LONG 57°25.30' W DATE 17/08/1982 DEPTH 20 M

I	P	I	P	I	P	I	P
419	5.81	399	6.82	319	7.30	299	5.44
263	6.77	239	6.22	191	6.26	163	5.90
136	6.03	128	6.33	112	6.62	96	6.42
92	6.48	78	5.86	72	6.63	68	6.41
68	6.37	53	5.73	50	5.05	48	5.66
42	5.62	36	4.16	29	4.85	26	3.91
22	3.88	19	2.68	17	2.55	13	1.96
12	2.38	11	1.42	9	1.35	8	.77
7	.90	6	.44	5	.60	5	.18
4	.46	4	.19	3	.42	3	.15
3	.13	2	.29				

PARAMETER VALUES

PS : 6.98
(6.59, 7.37)

ALPHA : .211
(.197, .225)

BETA : .0021
(.0005, .0037)

SAMPLE TEMP 3.4°C

INCUBATION TEMP 5.0°C

CHLOROPHYLL : .15

AMMONIA : .63

NITRATE : .00

SILICATE : .23

PHOSPHATE : .22

LABRADOR SHELF AND HUDSON BAY 1982

LAT 55°23.90' N LONG 57°25.30' W DATE 17/08/1982 DEPTH 10 M

I	P	I	P	I	P	I	P
478	4.34	439	4.35	339	5.37	311	4.83
291	4.81	231	5.42	199	4.60	183	4.56
144	4.94	136	4.43	128	4.63	104	4.47
96	4.41	92	4.83	80	4.68	68	4.12
64	4.02	56	3.77	46	3.98	46	3.69
42	4.14	31	2.99	25	1.97	24	2.49
18	1.64	18	1.77	13	1.15	13	1.13
10	.69	10	.80	8	.47	7	.55
6	.29	6	.32	5	.28	5	.09
4	.02	3	.15	3	.00	2	.00
2	.00						

PARAMETER VALUES

PS : 5.41
(5.07, 5.74)

ALPHA : .123
(.115, .130)

BETA : .0021
(.0008, .0034)

SAMPLE TEMP 6.0°C

INCUBATION TEMP 5.0°C

CHLOROPHYLL : .29

AMMONIA : 1.04

NITRATE : .00

SILICATE : .42

PHOSPHATE : .16

LABRADOR SHELF AND HUDSON BAY 1982

LAT 56° 2.20' N LONG 58° 8.80' W DATE 17/08/1982 DEPTH 11 M

I	P	I	P	I	P	I	P
478	5.71	419	5.55	339	6.46	315	6.12
219	6.64	199	6.32	199	6.61	140	6.28
136	6.56	132	6.82	104	6.79	96	7.52
96	5.90	76	7.10	66	6.94	64	7.00
52	6.97	49	6.64	46	6.30	42	6.41
36	7.50	30	5.34	29	4.57	20	4.27
16	4.00	14	3.14	11	2.75	11	2.57
9	1.81	8	1.64	8	1.49	7	.75
5	.95	5	.80	4	.45	4	.68
3	.25	3	.32	3	.51	3	.08
2	.26						

PARAMETER VALUES

PS : 7.73
(7.38, 8.08)

ALPHA : .299
(.280, .319)

BETA : .0057
(.0039, .0074)

SAMPLE TEMP 6.8°C

INCUBATION TEMP 3.5°C

CHLOROPHYLL : .09

AMMONIA : .37

NITRATE : .00

SILICATE : .25

PHOSPHATE : .16

LABRADOR SHELF AND HUDSON BAY 1982

LAT 56° 2.20' N LONG 58° 8.80' W DATE 17/08/1982 DEPTH 20 M

I	P	I	P	I	P	I	P
478	4.61	339	4.37	279	5.19	215	5.21
179	5.09	163	5.64	124	5.43	124	4.62
120	5.48	92	5.28	90	4.92	88	5.18
68	5.54	64	5.75	62	5.88	55	5.59
44	4.88	44	4.41	38	4.76	33	4.10
30	4.80	26	3.59	24	3.59	17	2.68
16	2.34	14	1.93	11	1.26	9	1.36
8	.93	7	.99	6	.70	5	.39
5	.19	4	.50	4	.27	3	.32
3	.00	3	.20	2	.01	2	.02

PARAMETER VALUES

PS : 6.22
(5.87, 6.57)

ALPHA : .207
(.193, .221)

BETA : .0050
(.0032, .0069)

SAMPLE TEMP 3.0°C

INCUBATION TEMP 3.5°C

CHLOROPHYLL : .13

AMMONIA : 1.62

NITRATE : .00

SILICATE : .33

PHOSPHATE : .31

LABRADOR SHELF AND HUDSON BAY 1982

LAT 57° 1.90' N LONG 59°54.40' W DATE 18/08/1982 DEPTH 15 M

I	P	I	P	I	P	I	P
478	7.08	439	6.19	419	6.90	339	7.23
315	6.67	219	7.01	199	8.57	199	7.20
140	7.66	136	7.61	132	7.78	104	7.24
96	8.64	96	7.85	76	7.59	66	8.36
64	7.84	52	6.70	49	7.52	46	7.81
42	7.31	36	6.63	30	5.85	29	5.13
20	4.28	16	2.96	14	2.46	11	3.06
11	2.39	9	2.60	8	1.42	7	.48
5	.18	5	.42	4	.00	4	.36
3	.00						

PARAMETER VALUES

PS : 9.04 (8.55, 9.54)

ALPHA : .289 (.268, .310)

BETA : .0067 (.0045, .0089)

SAMPLE TEMP 3.0°C

INCUBATION TEMP 5.0°C

CHLOROPHYLL : .07

AMMONIA : .77

NITRATE : .00

SILICATE : .31

PHOSPHATE : .24

LABRADOR SHELF AND HUDSON BAY 1982

LAT 57° 1.90' N LONG 59°54.40' W DATE 18/08/1982 DEPTH 10 M

I	P	I	P	I	P	I	P
478	4.81	439	5.04	339	3.98	319	4.87
279	4.73	215	4.84	179	4.18	163	4.94
124	4.65	124	4.08	120	4.39	92	4.70
90	3.87	88	4.54	68	4.27	64	4.86
62	4.59	55	5.00	44	3.64	44	4.43
38	4.52	33	3.20	30	2.75	26	1.68
24	2.21	17	1.36	16	1.44	14	1.25
14	1.11	11	.75	9	.81	8	.41
7	.52	6	.64	5	.33	5	.32
4	.30	4	.03	3	.16	3	.46
3	.00	2	.06	2	.04		

PARAMETER VALUES

PS : 5.01 (4.63, 5.39)

ALPHA : .140 (.127, .153)

BETA : .0009 (-.0005, .0024)

SAMPLE TEMP 5.8°C

INCUBATION TEMP 5.0°C

CHLOROPHYLL : .10

AMMONIA : .52

NITRATE : .00

SILICATE : .21

PHOSPHATE : .21

LABRADOR SHELF AND HUDSON BAY 1982

LAT 57°54.50' N LONG 60°55.90' W DATE 18/08/1982 DEPTH 35 M

I	P	I	P	I	P	I	P
478	.74	458	.51	383	1.13	319	1.09
279	1.02	199	1.62	171	1.22	171	1.17
136	1.67	116	1.38	100	1.60	76	1.76
70	1.60	64	1.77	56	1.74	50	1.72
42	1.61	40	1.72	36	1.73	29	1.62
28	1.76	22	1.63	20	1.67	14	1.20
12	.69	11	.85	8	.77	8	.75
6	.63	6	.60	5	.58	5	.56
4	.35	4	.40	3	.24	3	.28
3	.18	2	.12	2	.15	2	.13

PARAMETER VALUES

PS : 2.05 (1.96, 2.15)

ALPHA : .123 (.114, .131)

BETA : .0046 (.0039, .0053)

SAMPLE TEMP 3.5°C

INCUBATION TEMP 6.0°C

CHLOROPHYLL : 2.33

AMMONIA : .87

NITRATE : .16

SILICATE : 1.66

PHOSPHATE : .23

LABRADOR SHELF AND HUDSON BAY 1982

LAT 57°54.50' N LONG 60°55.90' W DATE 18/08/1982 DEPTH 10 M

I	P	I	P	I	P	I	P
478	2.39	439	2.86	339	2.74	319	2.49
295	2.07	223	2.13	195	1.92	187	2.32
140	2.05	132	2.48	120	2.76	100	2.40
88	2.24	84	2.01	68	2.45	66	1.96
60	1.92	56	1.84	48	1.64	46	1.92
38	2.15	36	1.35	31	1.53	24	1.33
21	1.22	16	1.16	16	.92	13	.69
12	.72	9	.53	9	.58	7	.41
7	.37	5	.27	5	.23	4	.36
4	.21	3	.13	3	.21	3	.08
3	.13	2	.06	2	.03		

PARAMETER VALUES

PS : 2.40 (2.25, 2.54)

ALPHA : .074 (.068, .080)

BETA : .0000 (-.0005, .0005)

SAMPLE TEMP 4.2°C

INCUBATION TEMP 6.0°C

CHLOROPHYLL : .33

AMMONIA : .48

NITRATE : .00

SILICATE : .86

PHOSPHATE : .17

LABRADOR SHELF AND HUDSON BAY 1982

LAT 59°15.30' N LONG 62° 1.60' W DATE 18/08/1982 DEPTH 19 M

I	P	I	P	I	P	I	P
478	2.12	419	2.39	359	4.17	323	3.21
199	3.54	175	3.30	104	3.47	96	3.37
88	3.66	80	3.66	68	3.24	64	3.69
52	3.67	48	3.46	44	3.21	42	3.02
32	2.84	32	2.69	26	2.06	24	2.29
18	1.98	16	2.27	13	1.48	12	1.48
10	1.30	9	1.46	8	1.10	7	.99
6	.66	5	.42	5	.45	4	.32
4	.38	3	.15	3	.12	2	.06
2	.12	2	.23				

PARAMETER VALUES

PS : 4.12 (3.88, 4.36)

ALPHA : .151 (.140, .162)

BETA : .0037 (.0026, .0049)

SAMPLE TEMP 3.0°C

INCUBATION TEMP 4.5°C

CHLOROPHYLL : .10

AMMONIA : 1.66

NITRATE : .00

SILICATE : .36

PHOSPHATE : .45

LABRADOR SHELF AND HUDSON BAY 1982

LAT 59°15.30' N LONG 62° 1.60' W DATE 18/08/1982 DEPTH 10 M

I	P	I	P	I	P	I	P
498	3.44	439	4.10	343	3.68	335	3.32
319	3.22	239	3.35	223	3.75	144	4.15
102	3.92	96	4.16	82	3.37	70	2.98
60	2.86	52	2.37	48	3.36	48	2.96
48	2.84	38	3.05	34	2.04	27	2.18
25	1.66	16	1.25	13	.62	13	.73
10	.37	9	.45	7	.44	7	.38
6	.12	5	.53	4	.00	4	.00
3	.03	3	.02	2	.06	2	.00

PARAMETER VALUES

PS : 4.42
(3.96, 4.89)

ALPHA : .093
(.085, .101)

BETA : .0025
(.0008, .0041)

SAMPLE TEMP 5.2°C

INCUBATION TEMP 4.5°C

CHLOROPHYLL : .11

AMMONIA : .40

NITRATE : .00

SILICATE : .32

PHOSPHATE : .29

LABRADOR SHELF AND HUDSON BAY 1982

LAT 60°48.00' N LONG 64°19.00' W DATE 19/08/1982 DEPTH 30 M

I	P	I	P	I	P	I	P
498	1.18	458	1.05	383	1.58	359	1.66
339	1.81	243	1.93	239	2.00	239	1.73
148	1.98	146	1.98	120	1.79	98	2.04
98	1.94	86	1.88	71	1.86	50	1.68
46	1.68	37	1.74	35	1.53	28	1.46
27	1.46	20	1.05	19	1.23	15	.58
14	.97	10	.42	10	.53	8	.45
8	.43	6	.36	6	.30	5	.27
4	.31	4	.15	3	.21	3	.09
2	.06						

PARAMETER VALUES

PS : 2.41
(2.28, 2.53)

ALPHA : .072
(.067, .076)

BETA : .0030
(.0023, .0036)

SAMPLE TEMP 1.0°C

INCUBATION TEMP 4.0°C

CHLOROPHYLL : 2.60

AMMONIA : .94

NITRATE : 4.40

SILICATE : 4.98

PHOSPHATE : .86

LABRADOR SHELF AND HUDSON BAY 1982

LAT 60°48.00' N LONG 64°19.00' W DATE 19/08/1982 DEPTH 10 M

I	P	I	P	I	P	I	P
478	1.73	439	2.07	367	1.89	343	2.13
251	1.88	239	1.84	215	1.94	183	2.05
151	1.95	140	2.04	120	1.74	102	1.80
102	1.90	86	1.78	82	1.88	71	1.72
62	1.67	62	1.75	50	1.95	46	1.96
35	1.35	34	1.54	25	1.17	24	1.13
17	.98	17	.87	13	.64	12	.62
10	.50	10	.51	7	.32	7	.35
6	.19	5	.23	5	.12	4	.14
3	.08	3	.09	3	.06	2	.08
2	.02	2	.03				

PARAMETER VALUES

PS : 2.01
(1.93, 2.09)

ALPHA : .068
(.064, .072)

BETA : .0002
(-.0001, .0006)

SAMPLE TEMP 1.1°C

INCUBATION TEMP 4.0°C

CHLOROPHYLL : 5.36

AMMONIA : .45

NITRATE : 1.61

SILICATE : 2.75

PHOSPHATE : .52

LABRADOR SHELF AND HUDSON BAY 1982

LAT 5°60.00' N LONG 40°65.00' W DATE 20/08/1982 DEPTH 45 M

I	P	I	P	I	P	I	P
478	1.96	447	2.32	361	3.00	339	2.87
259	2.63	235	2.58	227	2.63	167	2.73
159	2.41	146	2.51	120	2.64	96	2.71
73	3.12	64	2.80	52	2.94	50	2.84
44	3.08	35	3.34	34	3.09	26	3.10
24	3.43	19	2.43	17	2.55	14	1.96
12	1.87	10	1.42	9	1.27	8	1.00
7	1.20	5	.82	5	.76	4	.54
3	.45	3	.45	2	.26	2	.35
2	.14	2	.14				

PARAMETER VALUES

PS : 3.21 (3.06, 3.36)

ALPHA : .230 (.210, .249)

BETA : .0025 (.0017, .0032)

SAMPLE TEMP .2°C

INCUBATION TEMP .5°C

CHLOROPHYLL : .63

AMMONIA : .43

NITRATE : 4.75

SILICATE : 5.48

PHOSPHATE : .68

LABRADOR SHELF AND HUDSON BAY 1982

LAT 5°60.00' N LONG 40°65.00' W DATE 20/08/1982 DEPTH 10 M

I	P	I	P	I	P	I	P
490	4.32	419	4.10	383	5.03	339	5.08
319	4.07	267	4.30	245	4.25	239	3.88
175	4.34	171	4.40	169	5.10	124	4.80
120	4.62	118	5.30	88	4.86	84	4.63
82	4.73	60	4.46	59	4.95	46	4.73
38	3.67	34	3.69	25	3.13	20	2.21
20	2.14	15	1.87	14	1.73	11	1.36
11	1.38	8	.90	8	.82	7	.61
6	.56	5	.39	5	.42	4	.31
4	.23	3	.13	3	.14	2	.07
2	.11						

PARAMETER VALUES

PS : 5.27
(5.00, 5.54)

ALPHA : .166
(.154, .177)

BETA : .0027
(.0016, .0038)

SAMPLE TEMP 2.7°C

INCUBATION TEMP 2.7°C

CHLOROPHYLL : .92

AMMONIA : 1.20

NITRATE : .74

SILICATE : 1.47

PHOSPHATE : .29

LABRADOR SHELF AND HUDSON BAY 1982

LAT 9°61.00' N LONG 15°67.00' W DATE 21/08/1982 DEPTH 45 M

I	P	I	P	I	P	I	P
478	1.93	439	1.37	347	1.92	339	1.83
331	1.53	327	2.49	255	2.53	247	2.07
231	2.38	183	2.19	167	2.37	128	2.84
120	2.39	92	2.90	80	2.51	80	2.32
62	2.57	60	2.46	58	2.53	42	2.53
36	2.50	29	1.96	26	1.97	21	1.92
20	1.80	15	1.21	14	1.42	11	.88
10	1.09	8	.64	8	.59	6	.52
6	.48	5	.38	5	.47	4	.26
3	.27	3	.27	2	.24	2	.16
2	.26						

PARAMETER VALUES

PS : 3.07
(2.91, 3.22)

ALPHA : .121
(.113, .129)

BETA : .0041
(.0032, .0049)

SAMPLE TEMP 1.5°C

INCUBATION TEMP 1.5°C

CHLOROPHYLL : 1.48

AMMONIA : .76

NITRATE : 4.21

SILICATE : 4.53

PHOSPHATE : .66

LABRADOR SHELF AND HUDSON BAY 1982

LAT 9°61.00' N LONG 15°67.00' W DATE 21/08/1982 DEPTH 10 M

I	P	I	P	I	P	I	P
458	2.29	419	2.15	327	2.36	319	1.93
303	2.28	243	2.17	227	2.51	215	2.12
159	2.54	159	2.11	155	2.55	128	2.15
120	2.08	100	2.23	96	2.37	82	2.36
78	1.97	66	1.88	60	1.52	58	2.00
50	1.78	42	1.48	36	1.71	31	1.25
27	1.40	21	.97	19	1.07	15	.77
14	.75	10	.48	10	.55	8	.34
8	.37	6	.22	6	.21	5	.10
5	.17	4	.11	4	.00	4	.16
3	.16	2	.01				

PARAMETER VALUES

PS : 2.49 (2.35, 2.64)

ALPHA : .061 (.057, .065)

BETA : .0008 (.0003, .0014)

SAMPLE TEMP 1.5°C

INCUBATION TEMP 1.5°C

CHLOROPHYLL : 3.39

AMMONIA : .37

NITRATE : .71

SILICATE : 1.62

PHOSPHATE : .32

LABRADOR SHELF AND HUDSON BAY 1982

LAT 61°17.70' N LONG 69° 9.10' W DATE 22/08/1982 DEPTH 45 M

I	P	I	P	I	P	I	P
450	.58	439	.77	399	1.02	359	1.29
255	1.63	223	1.81	163	2.21	169	1.99
120	2.10	120	2.24	104	1.87	88	2.02
66	2.10	60	1.92	50	2.01	46	2.21
36	1.97	33	2.08	26	2.05	24	1.75
20	1.62	18	1.71	14	1.60	14	1.60
11	1.63	9	1.14	8	.93	8	.83
6	.87	5	.35	4	.40	4	.35
3	.13	3	.16	2	.15		

PARAMETER VALUES

PS : 2.62
(2.48, 2.76)

ALPHA : .150
(.139, .162)

BETA : .0059
(.0048, .0069)

SAMPLE TEMP .2°C

INCUBATION TEMP 5.5°C

CHLOROPHYLL : .61

AMMONIA : .57

NITRATE : .46

SILICATE : .50

PHOSPHATE : .57

LABRADOR SHELF AND HUDSON BAY 1982

LAT 61°17.70' N LONG 69° 9.10' W DATE 22/08/1982 DEPTH 10 M

I	P	I	P	I	P	I	P
458	2.47	399	2.55	375	2.56	335	3.04
259	3.31	239	3.23	179	3.82	171	.19
159	3.14	132	3.09	120	3.03	110	.40
96	2.88	82	3.15	68	3.26	60	.13
54	3.39	52	3.32	42	2.89	38	.05
31	1.79	28	2.46	22	1.95	20	1.69
17	1.07	16	1.84	13	1.21	12	1.31
9	.77	9	.95	7	.57	6	.61
5	.46	5	.30	4	.19	4	.22
3	.21	3	.09	3	.21	2	.10

PARAMETER VALUES

PS : 3.72 (3.52, 3.91)

ALPHA : .124 (.116, .132)

BETA : .0032 (.0022, .0042)

SAMPLE TEMP 2.3°C

INCUBATION TEMP 5.5°C

CHLOROPHYLL : .91

AMMONIA : .45

NITRATE : .00

SILICATE : .55

PHOSPHATE : .47

LABRADOR SHELF AND HUDSON BAY 1982

LAT 61° 6.50' N LONG 69°32.30' W DATE 23/08/1982 DEPTH 25 M

I	P	I	P	I	P	I	P
458	2.02	419	1.97	355	3.03	319	2.91
247	3.62	243	3.74	227	3.52	171	3.75
155	3.59	151	3.95	124	4.01	104	3.59
82	3.51	72	3.89	69	3.65	64	3.78
54	3.90	52	3.49	45	3.52	36	3.31
28	2.75	27	2.54	20	2.33	20	2.14
15	1.84	15	1.59	11	1.04	9	.63
9	.80	7	.55	6	.51	5	.44
4	.33	4	.35	3	.18	2	.14
2	.16						

PARAMETER VALUES

PS : 5.24 (4.92, 5.56) ALPHA : .135 (.128, .143) BETA : .0097 (.0079, .0116)

SAMPLE TEMP 2.7°C INCUBATION TEMP 6.5°C

CHLOROPHYLL : 1.84

AMMONIA : .57

NITRATE : .29

SILICATE : 1.18

PHOSPHATE : .58

LABRADOR SHELF AND HUDSON BAY 1982

LAT 61° 6.50' N LONG 69°32.30' W DATE 23/08/1982 DEPTH 10 M

I	P	I	P	I	P	I	P
466	3.39	419	3.50	311	3.30	303	3.71
279	3.28	215	3.53	211	3.49	199	3.12
144	3.25	140	3.28	124	3.33	110	4.06
108	3.59	96	3.27	82	3.57	66	3.33
60	3.37	58	3.63	48	3.42	48	3.67
38	3.12	36	2.58	32	2.98	27	2.15
26	2.02	19	1.74	18	1.72	14	1.19
13	1.17	12	.88	10	1.10	8	.59
7	.57	6	.45	6	.41	5	.26
4	.35	4	.24	4	.18	3	.10
3	.14	3	.06	2	.09		

PARAMETER VALUES

PS : 3.84	ALPHA : .129	BETA : .0014
(3.65, 4.04)	(.120, .137)	(.0006, .0023)

SAMPLE TEMP 3.8°C INCUBATION TEMP 6.5°C

CHLOROPHYLL :	.42	NITRATE :	.00
AMMONIA :	.40	SILICATE :	.31
		PHOSPHATE :	.42

LABRADOR SHELF AND HUDSON BAY 1982

LAT 62°49.30' N LONG 72°56.20' W DATE 24/08/1982 DEPTH 45 M

I	P	I	P	I	P	I	P
458	.58	359	.49	331	.52	259	.58
255	.95	231	.90	191	.79	175	.79
163	.72	148	1.05	104	.97	87	.81
76	.97	70	1.03	60	.85	35	.90
26	.83	22	.81	20	.77	15	.56
14	.73	10	.61	10	.58	8	.40
7	.31	6	.24	6	.37	5	.25
4	.23	3	.15	3	.18	2	.08
2	.11	2	.03	2	.00		

PARAMETER VALUES

PS : 1.10 (1.03, 1.16)

ALPHA : .067 (.062, .073)

BETA : .0018 (.0013, .0022)

SAMPLE TEMP .4°C

INCUBATION TEMP 2.5°C

CHLOROPHYLL : .21

AMMONIA : 1.05

NITRATE : 3.79

SILICATE : .82

PHOSPHATE : 2.46

LABRADOR SHELF AND HUDSON BAY 1982

LAT 62°49.30' N LONG 72°56.20' W DATE 24/08/1982 DEPTH 10 M

I	P	I	P	I	P	I	P
466	1.54	399	1.28	331	1.31	323	1.16
259	1.09	231	1.74	223	1.58	203	1.24
175	1.76	159	1.59	159	1.54	128	1.86
120	1.47	112	1.69	92	1.58	90	1.49
64	1.63	59	1.33	49	1.73	42	1.33
37	1.11	30	1.18	26	1.51	22	1.14
15	.93	15	1.00	12	.73	11	.75
9	.62	8	.70	7	.39	6	.49
5	.28	5	.36	4	.14	3	.25
3	.05	3	.18	2	.04	2	.10

PARAMETER VALUES

PS : 1.70 (1.61, 1.80)

ALPHA : .085 (.077, .093)

BETA : .0011 (.0006, .0015)

SAMPLE TEMP 3.8°C

INCUBATION TEMP 2.5°C

CHLOROPHYLL : .30

AMMONIA : .33

NITRATE : .00

SILICATE : .20

PHOSPHATE : .37

LABRADOR SHELF AND HUDSON BAY 1982

LAT 62° .40' N LONG 78°35.00' W DATE 25/08/1982 DEPTH 25 M

I	P	I	P	I	P	I	P
458	.48	411	.60	359	.75	331	.80
331	.69	259	.94	255	.81	231	.82
191	1.27	175	1.37	163	1.37	148	1.42
112	1.49	104	1.36	76	1.61	70	1.74
60	1.43	49	1.64	42	1.52	31	1.43
26	1.41	22	1.00	20	1.11	15	1.21
14	1.18	10	.97	10	1.04	8	.88
7	.98	6	.50	6	.77	5	.32
4	.58	3	.46	3	.35	2	.22
2	.18	2	.18				

PARAMETER VALUES

PS : 1.90	ALPHA : .127	BETA : .0051
(1.81, 2.00)	(.118, .136)	(.0044, .0059)

SAMPLE TEMP .7°C INCUBATION TEMP 2.0°C

CHLOROPHYLL : 1.07 NITRATE : 3.00

AMMONIA : .46 SILICATE : 7.94

PHOSPHATE : .85

LABRADOR SHELF AND HUDSON BAY 1982

LAT 62° .40' N LONG 78°35.00' W DATE 25/08/1982 DEPTH 10 M

I	P	I	P	I	P	I	P
466	2.85	399	3.40	331	3.53	323	3.23
231	4.18	223	3.85	203	3.02	175	3.85
159	2.85	159	3.64	128	3.87	120	3.51
112	3.83	92	3.86	80	3.72	64	3.96
63	3.83	59	3.77	49	3.30	42	2.86
37	3.01	26	2.05	22	1.78	20	2.55
15	1.86	15	1.91	12	1.19	11	1.05
9	.85	8	.85	7	.53	6	.63
5	.41	5	.45	4	.30	3	.27
3	.17	3	.13	2	.07	2	.26

PARAMETER VALUES

PS : 4.23	ALPHA : .138	BETA : .0030
(4.00, 4.46)	(.128, .148)	(.0019, .0042)

SAMPLE TEMP 3.7°C INCUBATION TEMP 2.0°C

CHLOROPHYLL : .34 NITRATE : .00

AMMONIA : .38 SILICATE : 2.43

PHOSPHATE : .57

LABRADOR SHELF AND HUDSON BAY 1982

LAT 62°53.00' N LONG 82°25.00' W DATE 26/08/1982 DEPTH 25 M

I	P	I	P	I	P	I	P
439	1.77	419	1.56	339	1.74	335	1.55
331	1.52	237	1.20	235	1.45	219	1.68
175	1.54	159	1.38	159	1.31	124	1.50
110	1.93	106	1.63	96	1.34	84	1.74
78	1.87	60	1.85	58	1.79	46	1.80
36	1.59	30	1.45	28	1.18	24	1.37
24	1.15	18	.69	17	.79	14	.57
12	.75	10	.55	10	.70	7	.21
7	.36	6	.11	6	.24	4	.31
4	.22	4	.28	3	.13	3	.15
3	.10						

PARAMETER VALUES

PS : 1.74 (1.63, 1.85)

ALPHA : .077 (.069, .084)

BETA : .0006 (.0001, .0011)

SAMPLE TEMP .8°C

INCUBATION TEMP 10.5°C

CHLOROPHYLL : .16

AMMONIA : .37

NITRATE : .00

SILICATE : 2.13

PHOSPHATE : .64

LABRADOR SHELF AND HUDSON BAY 1982

LAT 62°53.00' N LONG 82°25.00' W DATE 26/08/1982 DEPTH 10 M

I	P	I	P	I	P	I	P
323	2.44	242	2.38	235	2.77	219	2.38
175	2.80	165	2.45	163	2.28	126	2.31
120	2.08	108	2.40	91	2.12	78	2.56
78	2.71	58	2.39	56	1.89	47	2.23
41	1.70	35	2.28	28	1.48	27	1.71
24	1.03	20	1.14	17	.93	16	.90
12	.60	12	.39	7	.55	5	.58
5	.54	4	.32	3	.00	3	.01
2	.03	2	.00				

PARAMETER VALUES

PS : 2.60	ALPHA : .080	BETA : .0005
(2.34, 2.87)	(.072, .088)	(-.0008, .0019)

SAMPLE TEMP 5.7°C INCUBATION TEMP 10.5°C

CHLOROPHYLL : .07 NITRATE : .00

AMMONIA : .27 SILICATE : 2.18

PHOSPHATE : .46

LABRADOR SHELF AND HUDSON BAY 1982

LAT 63°31.30' N LONG 88°22.50' W DATE 27/08/1982 DEPTH 30 M

I	P	I	P	I	P	I	P
439	.53	435	.44	359	1.12	343	.94
325	.94	259	1.51	199	1.50	163	1.55
161	1.59	148	1.76	136	1.51	116	1.64
106	1.72	102	1.52	84	1.77	73	1.64
72	1.70	65	1.78	54	1.79	49	1.83
47	1.93	42	1.97	35	1.83	32	1.41
27	1.28	22	.99	22	1.23	17	1.03
17	1.03	13	.82	12	.84	10	.58
9	.65	8	.45	7	.42	6	.31
6	.30	5	.21	4	.23	4	.14
3	.11	3	.07	3	.09		

PARAMETER VALUES

PS : 2.51 (2.33, 2.68)

ALPHA : .079 (.074, .084)

BETA : .0073 (.0059, .0086)

SAMPLE TEMP .2°C

INCUBATION TEMP 4.5°C

CHLOROPHYLL : 2.25

AMMONIA : .73

NITRATE : .83

SILICATE : 5.85

PHOSPHATE : .87

LABRADOR SHELF AND HUDSON BAY 1982

LAT 63°31.30' N LONG 88°22.50' W DATE 27/08/1982 DEPTH 10 M

I	P	I	P	I	P	I	P
439	4.38	439	4.64	367	4.69	315	4.37
303	5.00	259	4.84	250	4.53	189	4.94
175	4.46	167	4.86	153	4.38	128	4.16
112	4.48	110	4.31	86	4.30	80	4.16
76	3.57	63	3.93	57	4.02	42	2.76
36	3.18	30	2.39	28	2.81	22	1.64
20	2.60	15	1.26	12	.91	11	.64
8	.48	8	.34	6	.67	6	.56
5	.21	5	.72	4	.14	3	.31
3	.17	3	.00	3	.02		

PARAMETER VALUES

PS : 4.89	ALPHA : .113	BETA : .0008
(4.60, 5.18)	(.106, .121)	(-.0002, .0018)

SAMPLE TEMP 5.7°C INCUBATION TEMP 4.5°C

CHLOROPHYLL : .12 NITRATE : .00

AMMONIA : .41 SILICATE : .65

PHOSPHATE : .36

LABRADOR SHELF AND HUDSON BAY 1982

LAT 63°10.00' N LONG 81°43.00' W DATE 28/08/1982 DEPTH 40 M

I	P	I	P	I	P	I	P
439	.53	387	.46	355	.70	311	1.16
255	1.36	231	1.85	219	1.40	177	1.42
169	1.60	159	1.45	136	2.05	126	1.46
116	1.45	95	1.77	85	1.41	67	1.77
58	1.92	38	1.84	30	1.65	28	1.67
22	1.66	18	1.32	16	1.48	13	1.01
12	1.53	9	1.04	9	.92	7	.60
7	.68	5	.49	5	.49	4	.40
3	.28	3	.24	2	.24	2	.13

PARAMETER VALUES

PS : 2.25	ALPHA : .133	BETA : .0057
(2.08, 2.41)	(.120, .145)	(.0044, .0070)

SAMPLE TEMP .2°C INCUBATION TEMP 3.5°C

CHLOROPHYLL : .95 NITRATE : .40

AMMONIA : .39 SILICATE : 3.17

PHOSPHATE : .72

LABRADOR SHELF AND HUDSON BAY 1982

LAT 63°10.00' N LONG 81°43.00' W DATE 28/08/1982 DEPTH 10 M

I	P	I	P	I	P	I	P
439	4.92	375	5.62	335	5.14	335	4.56
299	5.90	235	5.16	227	5.13	199	4.89
154	5.42	151	4.97	110	5.11	109	5.10
84	4.44	80	5.08	76	4.61	64	3.73
60	4.75	46	3.73	44	3.01	37	3.82
31	2.76	29	2.59	23	2.21	23	1.94
18	1.56	18	1.41	14	1.26	14	.98
10	.71	10	.66	8	.67	7	.52
6	.27	5	.12	4	.15	3	.20
2	.05						

PARAMETER VALUES

PS : 5.94	ALPHA : .116	BETA : .0024
(5.45, 6.43)	(.109, .124)	(.0006, .0042)

SAMPLE TEMP 5.0°C INCUBATION TEMP 3.5°C

CHLOROPHYLL : .14 NITRATE : .00

AMMONIA : .46 SILICATE : .83

PHOSPHATE : .47

LABRADOR SHELF AND HUDSON BAY 1982

LAT 64° 7.00' N LONG 79° 6.00' W DATE 29/08/1982 DEPTH 40 M

I	P	I	P	I	P	I	P
458	.47	419	.42	379	.85	327	.65
307	.75	275	.82	259	1.16	191	1.21
167	1.10	167	1.27	148	1.09	116	.97
113	1.17	100	1.23	82	1.11	81	.91
72	1.14	59	1.01	56	.98	52	.96
46	.82	39	1.13	32	.93	30	.79
23	.79	18	.80	14	.60	11	.68
11	.60	9	.41	8	.50	6	.44
6	.37	5	.23	5	.24	4	.16
4	.21	3	.14	3	.16		

PARAMETER VALUES

PS : 1.31 (1.22, 1.40)

ALPHA : .059 (.053, .065)

BETA : .0021 (.0015, .0026)

SAMPLE TEMP .5°C

INCUBATION TEMP 1.5°C

CHLOROPHYLL : 1.53

AMMONIA : .64

NITRATE : 3.46

SILICATE : 3.43

PHOSPHATE : .94

LABRADOR SHELF AND HUDSON BAY 1982

LAT 64° 7.00' N LONG 79° 6.00' W DATE 29/08/1982 DEPTH 10 M

I	P	I	P	I	P	I	P
335	2.48	319	1.87	263	2.03	239	2.15
235	2.39	207	2.43	171	2.16	159	1.85
151	2.26	120	2.25	116	2.40	64	2.34
59	1.98	58	2.39	47	2.09	38	2.19
34	1.60	30	1.65	25	1.14	23	1.26
18	.88	16	.98	14	1.11	14	.76
11	.54	11	.61	9	.38	9	.34
7	.35	5	.14	5	.16	4	.08
3	.16	3	.04	3	.05		

PARAMETER VALUES

PS : 2.65 (2.39, 2.92) ALPHA : .077 (.070, .083) BETA : .0020 (.0006, .0034)

SAMPLE TEMP 1.0°C INCUBATION TEMP 1.5°C

CHLOROPHYLL : 1.10

AMMONIA : .43

NITRATE : .00

SILICATE : .30

PHOSPHATE : .35

LABRADOR SHELF AND HUDSON BAY 1982

LAT 65°10.30' N LONG 79°14.80' W DATE 30/08/1982 DEPTH 30 M

I	P	I	P	I	P	I	P
419	2.40	399	2.26	359	2.78	239	3.28
239	2.94	155	2.86	132	2.87	104	3.13
78	3.03	67	2.55	56	2.06	20	2.08
18	2.04	16	1.55	15	1.40	12	.61
12	.84	10	.68	9	.65	7	.47
5	.43	4	.40	4	.20	3	.17
3	.14	2	.09				

PARAMETER VALUES

PS : 3.33	ALPHA : .104	BETA : .0022
(3.03, 3.62)	(.093, .115)	(.0009, .0035)

SAMPLE TEMP .2°C INCUBATION TEMP 1.2°C

CHLOROPHYLL : 1.35 NITRATE : 1.08

AMMONIA : .78 SILICATE : 2.61

PHOSPHATE : .78

LABRADOR SHELF AND HUDSON BAY 1982

LAT 65°10.30' N LONG 79°14.80' W DATE 30/08/1982 DEPTH 10 M

I	P	I	P	I	P	I	P
399	2.68	371	2.37	291	1.84	219	2.33
219	2.03	211	2.05	171	1.81	116	2.50
106	1.85	81	2.29	76	1.95	60	2.29
56	1.94	45	1.58	44	1.58	36	1.73
30	1.07	28	1.32	22	1.05	21	.76
16	.71	16	.64	13	.58	12	.58
9	.40	9	.38	7	.43	7	.34
6	.18	6	.21	5	.14	4	.14
3	.08	3	.11	3	.12	2	.08

PARAMETER VALUES

PS : 2.24	ALPHA : .063	BETA : .0000
(2.03, 2.45)	(.057, .068)	(-.0008, .0008)

SAMPLE TEMP .2°C INCUBATION TEMP 1.2°C

CHLOROPHYLL : 1.33 NITRATE : 1.68

AMMONIA : .48 SILICATE : 3.04

PHOSPHATE : .64

LABRADOR SHELF AND HUDSON BAY 1982

LAT 63°16.00' N LONG 74°43.00' W DATE 31/08/1982 DEPTH 40 M

I	P	I	P	I	P	I	P
419	.47	399	.33	363	.74	339	.51
299	.64	267	1.06	255	.96	215	.85
197	1.22	155	.92	148	1.21	144	1.06
108	1.07	102	1.18	102	1.22	78	1.06
76	.98	56	1.15	54	1.24	53	1.12
44	.90	40	1.23	30	1.23	22	1.16
21	.96	17	.99	16	1.09	13	.74
12	.71	10	.49	9	.62	8	.44
7	.47	6	.33	5	.23	4	.27
4	.22	4	.16	3	.13	3	.13
3	.11						

PARAMETER VALUES

PS : 1.43 (1.33, 1.51)

ALPHA : .082 (.074, .090)

BETA : .0031 (.0025, .0038)

SAMPLE TEMP .7°C

INCUBATION TEMP 1.5°C

CHLOROPHYLL : 1.69

AMMONIA : .97

NITRATE : 2.99

SILICATE : 1.12

PHOSPHATE : .66

LABRADOR SHELF AND HUDSON BAY 1982

LAT 63°16.00' N LONG 74°43.00' W DATE 31/08/1982 DEPTH 10 M

I	P	I	P	I	P	I	P
419	1.30	355	1.19	323	1.70	299	1.44
255	1.34	231	1.32	163	1.69	151	1.67
124	1.57	98	1.61	68	1.81	64	1.82
63	1.75	50	1.50	46	1.75	35	1.43
34	1.35	27	1.01	26	1.19	20	1.33
18	1.00	16	.93	14	.68	12	.72
10	.50	9	.59	8	.38	7	.38
6	.28	6	.16	5	.16	4	.12
4	.13	3	.22	3	.12	3	.00

PARAMETER VALUES

PS : 2.02	ALPHA : .072	BETA : .0024
(1.88, 2.15)	(.067, .077)	(.0017, .0031)

SAMPLE TEMP 2.7°C INCUBATION TEMP 1.5°C

CHLOROPHYLL : .27 NITRATE : .00

AMMONIA : .45 SILICATE : .23

PHOSPHATE : .35

LABRADOR SHELF AND HUDSON BAY 1982

LAT 62°13.00' N LONG 70°42.20' W DATE 01/09/1982 DEPTH 35 M

I	P	I	P	I	P	I	P
419	.35	399	.38	363	.66	339	.76
267	1.21	255	1.10	197	1.12	155	1.54
148	1.58	144	1.64	102	1.48	102	1.29
76	1.31	76	1.66	56	1.64	54	1.49
53	1.55	44	1.57	40	1.36	31	1.28
30	1.24	22	1.39	21	1.35	17	1.30
16	1.18	13	.94	12	.96	10	.73
9	.70	8	.55	7	.57	6	.36
5	.41	4	.36	4	.30	4	.36
3	.03	3	.00	3	.00		

PARAMETER VALUES

PS : 2.07 (1.92, 2.21)

ALPHA : .093 (.085, .100)

BETA : .0060 (.0048, .0073)

SAMPLE TEMP .6°C

INCUBATION TEMP 1.2°C

CHLOROPHYLL : 1.46

AMMONIA : 1.40

NITRATE : 2.73

SILICATE : 2.27

PHOSPHATE : .68

LABRADOR SHELF AND HUDSON BAY 1982

LAT 62°13.00' N LONG 70°42.20' W DATE 01/09/1982 DEPTH 10 M

I	P	I	P	I	P	I	P
419	2.54	419	2.83	355	2.69	323	2.74
299	2.35	255	2.48	231	2.26	227	2.68
171	2.61	151	2.38	124	2.39	116	2.81
114	2.60	98	2.42	90	2.58	85	2.52
68	2.41	63	2.18	50	2.05	46	2.44
35	1.96	27	1.87	26	1.41	20	1.63
18	1.03	16	1.21	14	.89	12	.76
10	.60	9	.67	8	.47	7	.32
6	.29	6	.32	5	.19	4	.12
4	.13	3	.17	3	.11	3	.10

PARAMETER VALUES

PS : 2.60
(2.48, 2.72)

ALPHA : .089
(.083, .095)

BETA : .0000
(-.0004, .0005)

SAMPLE TEMP 3.2°C

INCUBATION TEMP 1.2°C

CHLOROPHYLL : .20

AMMONIA : .44

NITRATE : .02

SILICATE : .40

PHOSPHATE : .31

LABRADOR SHELF AND HUDSON BAY 1982

LAT 62° .00' N LONG 64°35.00' W DATE 02/09/1982 DEPTH 60 M

I	P	I	P	I	P	I	P
423	.64	359	.97	355	.56	343	1.16
283	.90	263	1.44	243	1.83	199	1.42
185	1.82	140	1.38	126	1.69	96	1.71
84	1.96	69	1.80	61	2.13	61	2.14
49	2.03	48	1.89	41	1.52	33	2.05
30	1.73	26	1.95	21	1.85	20	1.67
16	1.56	16	1.57	15	1.21	12	1.29
12	1.29	9	1.36	7	.95	7	.88
5	.61	5	.58	4	.48	3	.49
3	.40	3	.43	2	.44	2	.19

PARAMETER VALUES

PS : 2.29	ALPHA : .167	BETA : .0055
(2.18, 2.41)	(.153, .180)	(.0045, .0064)

SAMPLE TEMP 1.0°C INCUBATION TEMP 1.5°C

CHLOROPHYLL : .34

AMMONIA : .50

NITRATE : 6.46

SILICATE : 8.20

PHOSPHATE : 1.02

LABRADOR SHELF AND HUDSON BAY 1982

LAT 62° .00' N LONG 64°35.00' W DATE 02/09/1982 DEPTH 10 M

I	P	I	P	I	P	I	P
399	3.61	379	3.12	311	4.44	303	4.52
239	4.49	231	4.45	211	4.38	159	4.50
155	4.00	148	4.47	106	4.71	96	5.00
82	4.42	62	4.72	58	3.77	53	4.22
48	3.77	41	3.60	38	4.46	30	2.84
23	2.43	22	2.37	17	1.97	17	1.90
14	1.39	13	1.03	11	1.14	10	.56
9	.62	8	.82	7	.52	6	.37
4	.28	4	.37	3	.17	3	.16
3	.07						

PARAMETER VALUES

PS : 5.92	ALPHA : .139	BETA : .0075
(5.41, 6.44)	(.129, .148)	(.0049, .0102)

SAMPLE TEMP 1.0°C INCUBATION TEMP 1.5°C

CHLOROPHYLL : .30 NITRATE : .00

AMMONIA : .32 SILICATE : .99

PHOSPHATE : .49

LABRADOR SHELF AND HUDSON BAY 1982

LAT 62°23.70' N LONG 60°27.70' W DATE 03/09/1982 DEPTH 40 M

I	P	I	P	I	P	I	P
407	.53	375	.53	331	.90	321	.63
291	.59	229	1.10	207	1.17	157	1.30
155	1.40	114	1.49	107	1.47	79	1.52
72	1.61	58	1.49	51	1.56	43	1.53
37	1.46	30	1.52	28	1.55	20	1.38
14	1.40	13	1.18	11	.81	11	1.03
9	.88	8	.93	7	.60	7	.55
6	.50	5	.37	4	.32	4	.30
4	.26	3	.20	3	.23	3	.14

PARAMETER VALUES

PS : 2.02	ALPHA : .118	BETA : .0062
(1.91, 2.12)	(.111, .126)	(.0053, .0071)

SAMPLE TEMP 3.6°C INCUBATION TEMP 1.2°C

CHLOROPHYLL : .52 NITRATE : .94

AMMONIA : .77 SILICATE : 1.35

PHOSPHATE : .34

LABRADOR SHELF AND HUDSON BAY 1982

LAT 62°23.70' N LONG 60°27.70' W DATE 03/09/1982 DEPTH 10 M

I	P	I	P	I	P	I	P
439	2.44	411	2.61	311	2.54	303	2.51
279	2.26	219	2.63	195	2.34	185	2.06
144	2.27	128	2.40	128	2.08	100	2.25
95	2.15	72	2.11	68	2.17	66	2.13
55	2.29	51	2.19	49	2.11	43	1.80
40	1.93	34	1.75	28	1.46	26	1.56
20	1.22	19	1.34	14	.93	14	1.01
11	.61	10	.56	8	.54	8	.63
6	.40	6	.37	5	.22	5	.24
4	.17	4	.11	3	.10	2	.12
2	.05						

PARAMETER VALUES

PS : 2.39	ALPHA : .086	BETA : .0000
(2.30, 2.48)	(.081, .090)	(-.0004, .0004)

SAMPLE TEMP 6.0°C INCUBATION TEMP 1.2°C

CHLOROPHYLL : .28 NITRATE : .00

AMMONIA : .18 SILICATE : 1.48

PHOSPHATE : .27

LABRADOR SHELF AND HUDSON BAY 1982

LAT 60°39.00' N LONG 61°31.00' W DATE 04/09/1982 DEPTH 60 M

I	P	I	P	I	P	I	P
391	.99	375	.71	291	1.00	261	.92
203	1.04	159	.91	114	.82	81	.98
74	.98	57	.93	53	1.08	45	.80
37	.86	32	1.09	27	.96	20	1.06
17	1.06	14	.64	14	.84	10	.70
10	.40	8	.56	7	.34	6	.39
5	.17	4	.27	3	.14	3	.15
3	.00	2	.13	2	.03		

PARAMETER VALUES

PS : 1.03 (.96, 1.10)

ALPHA : .086 (.075, .096)

BETA : .0004 (.0001, .0008)

SAMPLE TEMP .2°C

INCUBATION TEMP 2.5°C

CHLOROPHYLL : .14

AMMONIA : .71

NITRATE : 8.74

SILICATE : 9.15

PHOSPHATE : .97

LABRADOR SHELF AND HUDSON BAY 1982

LAT 60°39.00' N LONG 61°31.00' W DATE 04/09/1982 DEPTH 10 M

I	P	I	P	I	P	I	P
431	1.97	387	2.50	331	2.78	311	2.34
231	2.63	219	2.35	211	2.18	155	2.20
140	2.32	120	2.36	100	2.54	98	2.63
86	2.37	74	2.11	69	2.68	51	2.39
48	2.52	34	1.73	33	2.04	26	1.94
24	1.42	19	1.22	18	.89	14	.83
13	.84	10	.50	10	.54	8	.48
7	.45	6	.32	6	.29	5	.18
4	.21	4	.16	3	.14	3	.13
2	.09	2	.07	2	.05		

PARAMETER VALUES

PS : 2.71	ALPHA : .087	BETA : .0012
(2.54, 2.88)	(.080, .094)	(.0004, .0019)

SAMPLE TEMP 2.1°C INCUBATION TEMP 2.5°C

CHLOROPHYLL : 2.97 NITRATE : .89

AMMONIA : .49 SILICATE : 1.06

PHOSPHATE : .33

LABRADOR SHELF AND HUDSON BAY 1982

LAT 60°31.00' N LONG 64°23.00' W DATE 05/09/1982 DEPTH 40 M

I	P	I	P	I	P	I	P
439	1.86	399	1.45	331	2.17	303	2.09
299	2.05	211	2.04	159	1.82	151	1.85
108	1.77	108	1.98	84	1.80	74	2.07
74	1.79	60	2.01	54	2.03	52	1.85
44	2.24	34	1.86	27	2.00	25	1.91
18	1.68	12	1.01	11	.96	8	.65
7	.63	6	.64	4	.61	4	.49
4	.34	3	.36	3	.32	2	.14
2	.09	2	.14				

PARAMETER VALUES

PS : 2.05	ALPHA : .143	BETA : .0005
(1.97, 2.13)	(.130, .156)	(.0001, .0009)

SAMPLE TEMP 1.0°C INCUBATION TEMP 2.5°C

CHLOROPHYLL : .23 NITRATE : 6.91

AMMONIA : .84 SILICATE : 7.24

PHOSPHATE : .77

LABRADOR SHELF AND HUDSON BAY 1982

LAT 60°31.00' N LONG 64°23.00' W DATE 05/09/1982 DEPTH 10 M

I	P	I	P	I	P	I	P
411	2.27	371	2.53	287	2.89	259	2.49
195	2.58	187	2.70	151	2.97	144	2.54
104	2.97	94	2.54	88	2.92	70	2.24
56	2.27	52	1.95	48	2.07	36	1.70
30	1.87	26	1.67	25	1.84	18	1.03
18	1.53	14	1.02	14	1.28	11	.96
11	.68	9	.92	8	.65	7	.39
6	.61	5	.48	5	.75	4	.24
4	.44	3	.15	3	.23	2	.14
2	.03						

PARAMETER VALUES

PS : 2.88	ALPHA : .093	BETA : .0011
(2.72, 3.05)	(.087, .099)	(.0004, .0019)

SAMPLE TEMP 1.0°C INCUBATION TEMP 2.5°C

CHLOROPHYLL : .25 NITRATE : 6.41

AMMONIA : .96 SILICATE : 6.90

PHOSPHATE : .92

LABRADOR SHELF AND HUDSON BAY 1982

LAT 61°13.70' N LONG 64°59.20' W DATE 06/09/1982 DEPTH 50 M

I	P	I	P	I	P	I	P
462	1.98	419	2.20	331	2.06	327	1.87
295	1.81	207	2.23	207	2.38	157	2.58
155	2.49	132	2.67	112	2.18	96	2.49
71	2.33	69	2.48	59	2.52	52	2.43
45	2.27	27	1.92	24	1.93	19	1.56
18	1.64	14	1.07	14	1.23	11	.85
10	.85	8	.48	7	.68	7	.84
6	.34	5	.34	5	.28	4	.20
3	.22	3	.15	2	.13	2	.08

PARAMETER VALUES

PS : 2.80	ALPHA : .112	BETA : .0025
(2.68, 2.93)	(.105, .118)	(.0019, .0031)

SAMPLE TEMP .9°C INCUBATION TEMP 5.1°C

CHLOROPHYLL : 1.02 NITRATE : 4.29

AMMONIA : 1.03 SILICATE : 4.49

PHOSPHATE : .73

LABRADOR SHELF AND HUDSON BAY 1982

LAT 61°13.70' N LONG 64°59.20' W DATE 06/09/1982 DEPTH 10 M

I	P	I	P	I	P	I	P
391	2.56	307	2.75	287	2.20	271	3.03
211	2.52	191	2.44	183	2.90	148	3.01
144	2.34	104	3.02	86	3.31	75	2.89
66	2.68	56	2.65	54	3.04	50	2.05
42	2.29	35	2.09	33	2.78	27	2.13
24	2.23	20	1.48	18	1.70	14	1.08
14	.92	11	.61	11	.81	9	.53
8	.50	6	.41	6	.33	6	.29
5	.27	4	.24	3	.21	3	.18
2	.10	2	.15				

PARAMETER VALUES

PS : 3.34	ALPHA : .105	BETA : .0030
(3.04, 3.64)	(.096, .114)	(.0014, .0045)

SAMPLE TEMP 1.6°C INCUBATION TEMP 5.1°C

CHLOROPHYLL : 1.27 NITRATE : 3.27

AMMONIA : .51 SILICATE : 3.55

PHOSPHATE : .65

PROFILE DATA

UNITS

T	=	°C
Sal	=	0/00
Oxy	=	mg L^{-1}
NO_3	=	mg at m^{-3}
SiO_3	=	mg at m^{-3}
PO_4	=	mg at m^{-3}
Chl	=	mg m^{-3}

LABRADOR SHELF AND HUDSON BAY 1982

LAT 46°56.1 ' N LONG 59°33.4 ' W DATE 13/08/1982

Z	TEMP	SAL	OXY	NO3	SIO3	PO4	CHL
1	16.10	30.04	6.11	.00	1.93	.61	.66
10	15.60	30.08	6.20	.00	2.00	.61	.96
20	14.50	30.25	6.15	.00	2.09	.63	1.35
32	12.30	31.06	6.56	1.46	2.33	1.56	1.13
51	1.40	31.90	-	8.26	9.12	1.47	.10
102	1.10	32.89	7.22	7.60	6.10	1.28	.05
150	4.00	34.03	4.08	20.10	22.45	1.88	.03
210	5.00	34.33	3.62	22.36	25.05	1.98	.02
305	5.30	34.80	3.48	23.64	29.07	2.00	.00

LABRADOR SHELF AND HUDSON BAY 1982

LAT 53°53.0 ' N LONG 54°50.8 ' W DATE 15/08/1982

Z	TEMP	SAL	OXY	NO3	SIO3	PO4	CHL
1	8.77	31.53	7.76	-	-	-	.24
2	8.77	31.53	7.04	.00	.83	.59	.24
10	8.74	31.52	7.02	.00	.82	.59	.26
13	8.75	31.54	4.21	.00	.81	.53	.23
23	.31	32.66	5.23	.00	.81	.74	.14
41	-1.23	32.98	8.27	6.15	.81	1.10	.22
68	-1.45	33.14	7.63	9.40	2.90	1.26	.41
91	-	33.29	7.62	10.19	8.56	1.26	.14
117	-1.17	33.40	7.53	10.49	8.75	1.35	.10
140	-.97	33.52	7.38	10.94	8.83	1.60	.06

LABRADOR SHELF AND HUDSON BAY 1982

LAT 54°27.9 ' N LONG 55°22.3 ' W DATE 16/08/1982

Z	TEMP	SAL	OXY	NO3	SIO3	PO4	CHL
1	8.33	31.54	7.15	.00	.87	.69	-
14	6.61	31.64	7.61	.00	.82	.59	-
24	1.24	32.30	9.63	.00	.84	.80	-
34	-.50	32.77	9.48	.00	.82	.85	-
53	-1.40	32.96	7.93	6.30	.78	1.11	-
78	-1.44	33.12	7.54	9.00	5.77	1.31	-
103	-1.30	33.28	7.65	9.19	8.47	1.25	-
128	-.65	33.49	7.54	9.69	8.69	1.27	-

LABRADOR SHELF AND HUDSON BAY 1982

LAT 54°45.0 ' N LONG 55°52.0 ' W DATE 16/08/1982

Z	TEMP	SAL	OXY	NO3	SIO3	PO4	CHL
13	7.10	31.84	7.66	-	-	-	-
20	1.93	32.20	8.91	1.15	.94	.76	.20
30	-.19	32.57	9.72	.43	1.02	.66	.18
34	-.86	32.78	9.40	.43	.80	.79	.25
54	-1.46	32.99	7.49	8.66	3.60	1.33	1.29
79	-1.35	33.18	7.46	10.05	10.18	1.37	.17
108	-1.28	33.27	7.43	10.25	10.60	1.36	.09
204	-.15	33.70	7.08	13.93	11.24	1.45	.06
266	1.33	34.17	6.74	14.98	12.96	1.55	.04

LABRADOR SHELF AND HUDSON BAY 1982

LAT 55°08.2 ' N LONG 56°40.2 ' W DATE 17/08/1982

Z	TEMP	SAL	OXY	NO3	SIO3	PO4	CHL
1	-	31.66	7.56	.52	.94	.98	-
10	-	31.83	7.90	.00	.83	.64	-
15	-	32.58	9.89	.00	.81	.71	-
20	-	32.72	9.45	.00	.77	.86	-
30	-	32.80	7.62	7.35	1.21	1.42	-
50	-	32.87	7.65	7.56	3.40	1.77	-
75	-	32.95	7.53	8.47	5.40	1.32	-
100	-	-	7.47	9.04	7.80	1.34	-
125	-	33.10	7.40	9.53	10.01	1.39	-
150	-	33.29	7.32	10.27	11.39	1.71	-

LABRADOR SHELF AND HUDSON BAY 1982

LAT 55°23.9 ' N LONG 57°25.3 ' W DATE 17/08/1982

Z	TEMP	SAL	OXY	NO3	SIO3	PO4	CHL
3	6.68	31.67	7.50	.62	.92	.80	.37
12	6.60	31.97	7.55	.77	.91	.94	.36
16	6.17	31.75	7.89	1.52	.89	.93	.31
22	3.23	31.96	8.81	.00	.81	.72	.21
32	-.69	32.64	9.34	.53	.82	.83	.19
60	-1.49	32.83	7.62	7.56	5.33	1.30	.82
78	-1.51	32.90	7.42	8.57	5.76	1.36	.54
103	-1.42	33.02	7.38	9.72	11.23	1.40	.10
129	-1.33	33.14	7.25	10.06	11.50	1.52	.16

LABRADOR SHELF AND HUDSON BAY 1982

LAT 55°45.0 ' N LONG 57°50.5 ' W DATE 17/08/1982

Z	TEMP	SAL	OXY	NO3	SIO3	PO4	CHL
5	4.25	31.90	8.18	.00	.87	.76	-
14	2.91	32.21	8.38	.42	.87	.78	-
19	1.34	32.63	8.88	.84	.94	.83	-
24	-1.02	32.62	8.61	2.96	1.16	1.05	-
34	-1.28	32.67	8.03	5.12	2.02	1.23	-
53	-1.40	32.72	7.79	6.51	4.66	1.34	-
78	-1.40	32.81	7.55	6.37	3.93	1.29	-
104	-1.50	32.90	7.66	8.50	8.76	1.38	-
130	-1.48	32.95	7.42	8.98	9.95	1.42	-
155	-1.48	32.96	7.18	9.09	9.82	1.55	-

LABRADOR SHELF AND HUDSON BAY 1982

LAT 56°02.2 ' N LONG 58°08.8 ' W DATE 17/08/1982

Z	TEMP	SAL	OXY	NO3	SIO3	PO4	CHL
2	6.92	31.59	7.48	.62	.63	.66	.10
10	6.20	31.62	7.51	.45	.64	.67	.10
15	-	32.45	9.87	.43	.69	.85	.13
20	-.14	32.55	9.72	.00	.62	.72	.13
29	-1.11	32.79	9.10	1.05	.79	.89	.94
50	-1.53	32.91	7.47	8.48	5.63	1.77	.22
75	-1.50	33.03	7.45	9.72	9.22	1.65	.08
100	-1.34	33.12	7.41	9.39	9.44	1.45	.12
200	-.25	33.65	7.00	12.06	12.00	1.70	.09
403	2.97	34.55	6.49	15.44	11.40	1.50	.04

LABRADOR SHELF AND HUDSON BAY 1982

LAT 56°20.1 ' N LONG 58°44.0 ' W DATE 17/08/1982

Z	TEMP	SAL	OXY	NO3	SIO3	PO4	CHL
1	3.78	32.00	8.38	.68	.75	.77	-
13	3.59	32.00	8.41	.00	.67	.76	-
17	1.48	32.18	8.95	.00	.70	.85	-
23	2.12	32.31	9.09	.00	.71	.85	-
32	.38	32.38	8.70	.60	.72	.96	-
59	-.53	32.74	7.59	7.21	6.20	1.33	-
78	-.60	33.02	7.51	8.58	8.26	1.40	-
110	-.56	33.07	7.39	9.30	10.22	1.47	-
158	-.71	33.21	7.45	9.27	9.91	1.40	-
206	-.61	33.40	7.16	10.53	11.82	1.45	-

LABRADOR SHELF AND HUDSON BAY 1982

LAT 57°01.9 ' N LONG 59°54.4 ' W DATE 18/08/1982

Z	TEMP	SAL	OXY	NO3	SIO3	PO4	CHL
4	6.54	31.86	7.43	.49	.81	.76	.10
8	6.26	31.86	7.44	.00	.74	.69	.10
14	3.26	31.95	8.04	.00	.69	.78	.10
18	2.21	32.19	9.03	.42	.67	.72	.08
24	-.11	32.63	10.10	.00	.68	.83	.10
32	-1.08	32.80	9.23	.56	.69	.93	.17
54	-1.29	33.01	7.41	8.71	6.82	1.32	.63
78	-1.38	33.12	7.34	9.56	8.84	1.32	.29
107	-1.18	33.22	7.07	10.12	12.93	1.43	-

LABRADOR SHELF AND HUDSON BAY 1982

LAT 57°40.2 ' N LONG 60°39.6 ' W DATE 18/08/1982

Z	TEMP	SAL	OXY	NO3	SIO3	PO4	CHL
6	2.80	31.91	8.64	.47	.83	.77	-
15	2.40	32.15	9.02	.41	.78	.76	-
20	.02	32.48	8.98	1.17	1.17	.86	-
26	-.64	32.72	8.05	4.67	2.68	1.27	-
36	-.98	32.81	7.67	6.80	5.01	1.84	-
55	-1.27	32.92	7.34	8.63	8.73	1.39	-
81	-1.33	32.97	7.25	9.24	10.63	1.40	-
106	-1.31	32.99	7.23	9.27	10.93	1.40	-
156	-1.26	33.06	7.20	9.57	11.97	1.43	-
186	-1.16	33.14	7.16	9.94	12.74	1.46	-

LABRADOR SHELF AND HUDSON BAY 1982

LAT 57°54.5 ' N LONG 60°55.9 ' W DATE 18/08/1982

Z	TEMP	SAL	OXY	NO3	SIO3	PO4	CHL
3	3.64	32.68	8.32	.53	1.24	.65	.17
13	3.34	32.80	8.49	.00	1.30	.67	.18
17	2.97	32.87	8.56	.00	1.41	.78	.20
23	2.48	32.93	8.43	.00	1.60	.65	.44
32	2.01	32.99	8.17	.00	1.90	.75	2.67
53	1.06	33.03	8.07	1.90	2.47	.88	1.53
78	-.29	33.08	7.69	6.97	7.48	1.24	.12
104	-.51	33.17	7.52	7.92	9.26	1.26	.13
180	-.30	33.60	6.91	11.17	13.26	1.40	.07
233	.25	33.77	6.72	12.03	14.54	1.42	.05

LABRADOR SHELF AND HUDSON BAY 1982

LAT 58°12.7 ' N LONG 61°10.4 ' W DATE 18/08/1982

Z	TEMP	SAL	OXY	NO3	SIO3	PO4	CHL
5	4.06	31.94	8.25	.51	.91	.70	-
14	3.70	31.97	8.46	.00	.82	.70	-
19	3.42	32.00	8.60	.00	.85	.77	-
24	1.35	32.21	9.41	.00	.87	.73	-
34	.42	32.39	9.25	.00	.84	.74	-
56	-.40	32.67	8.15	3.01	1.05	1.19	-
80	-.63	32.85	7.67	5.83	3.29	1.19	-
106	-.90	33.00	7.46	8.44	7.94	1.39	-
156	-.97	32.33	7.07	10.15	13.42	1.47	-
196	-.90	33.24	7.07	10.59	13.61	1.53	-

LABRADOR SHELF AND HUDSON BAY 1982

LAT 59°15.3 ' N LONG 62°01.6 ' W DATE 19/08/1982

Z	TEMP	SAL	OXY	NO3	SIO3	PO4	CHL
5	5.29	31.60	7.70	.00	.90	.69	.28
14	4.98	31.65	7.96	.00	.92	.73	.09
18	2.30	32.01	9.04	.00	.89	.71	.11
24	.64	32.27	9.16	.00	.92	.80	.23
34	-.02	32.47	8.82	.89	1.98	.96	13.04
54	-.66	32.75	8.38	2.09	1.00	.97	1.15
79	-1.28	32.94	7.25	8.88	9.51	1.40	.14
105	-1.26	32.95	7.21	8.76	9.73	1.43	.15
114	-1.26	32.95	7.22	8.90	9.84	1.39	.13
126	-1.25	32.95	7.20	8.92	9.90	1.39	.10

LABRADOR SHELF AND HUDSON BAY 1982

LAT 60°18.4 ' N LONG 63°24.0 ' W DATE 19/08/1982

Z	TEMP	SAL	OXY	NO3	SIO3	PO4	CHL
5	.66	32.21	8.69	.92	1.91	.97	-
15	.37	32.27	8.48	2.99	2.21	1.04	-
20	.34	32.39	8.30	2.39	3.21	1.02	-
24	.32	32.41	8.22	3.05	3.95	1.04	-
35	.16	32.44	8.06	4.40	5.13	1.08	-
54	-.03	32.55	7.84	5.99	6.67	1.16	-
80	-.11	32.65	7.74	6.48	7.12	1.17	-
105	-.23	32.87	7.64	6.91	7.72	1.21	-
156	-.23	32.89	7.66	6.91	7.68	1.23	-

LABRADOR SHELF AND HUDSON BAY 1982

LAT 60°48.0 ' N LONG 64°19.0 ' W DATE 19/08/1982

Z	TEMP	SAL	OXY	NO3	SIO3	PO4	CHL
2	.53	32.23	8.53	1.94	3.34	1.03	4.72
13	.49	32.33	8.52	1.89	3.33	.97	3.41
22	.53	32.23	8.51	1.78	3.33	1.00	4.04
31	.20	32.32	8.08	4.20	5.03	1.26	1.99
52	.03	32.44	7.87	5.42	6.22	1.25	1.00
77	.01	32.46	7.87	5.59	6.35	1.17	1.11
101	-.11	32.54	7.83	5.87	6.43	1.23	.83
153	-.17	32.79	7.62	7.10	7.80	1.23	.44
210	.02	33.09	7.40	8.20	8.91	1.28	.42
301	.76	33.12	6.79	12.21	12.46	1.41	.19